

CMB 1RF

AWARD/CONTRACT		1. THIS CONTRACT IS RATED ORDER UNDER DPAS (15 CFR 350)		RATING N/A	PAGE 1	OF 30	PAGES
2. CONTRACT NO. (Proc. Inst. Ident.) NRC-04-00-041		3. EFFECTIVE DATE 09-25-2000		4. REQUISITION/PURCHASE REQUEST/PROJECT NO. RES-00-041			
5. ISSUED BY U.S. Nuclear Regulatory Commission Division of Contracts and Property Mgt. Attn: T-7-I-2 Contract Management Branch Washington DC 20555		6. ADMINISTERED BY (If other than Item 5) CODE					
7. NAME AND ADDRESS OF CONTRACTOR (No., street, city, county, State and ZIP Code) EQE International, Inc. C/O an ABS Group Company 1000 Technology Drive Knoxville, TN 37932-3353				8. DELIVERY <input type="checkbox"/> FOB ORIGIN <input type="checkbox"/> OTHER (See below)			
				9. DISCOUNT FOR PROMPT PAYMENT N/A			
				10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN: ITEM			
CODE		FACILITY CODE					
11. SHIP TO/MARK FOR U.S. Nuclear Regulatory Commission Washington DC 20555		12. PAYMENT WILL BE MADE BY U.S. Nuclear Regulatory Commission Office of the Chief Financial Officer Attn: GOV/COM Acctng. Section T-9H4 Washington DC 20555					
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304(c)() <input type="checkbox"/> 41 U.S.C. 253(c)()				14. ACCOUNTING AND APPROPRIATION DATA 31X0200.060 B&R: 06015110120 JCN: Y6215 BOC Code: 252A RES ID: RES-C00-301 OBLIGATION: \$126,000.00			
15A. ITEM NO.	15B. SUPPLIES/SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT		
	See Section B for Cost information.						
				15G. TOTAL AMOUNT CONTRACT \$1,728,494.00			
16. TABLE OF CONTENTS See Attached Table of Contents							
(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
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	B	SUPPLIES OR SERVICES AND PRICES/COSTS		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
	C	DESCRIPTION/SPECS./WORK STATEMENT			J	LIST OF ATTACHMENTS	
	D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS			
	E	INSPECTION AND ACCEPTANCE			K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
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	G	CONTRACT ADMINISTRATION DATA			M	EVALUATION FACTORS FOR AWARD	
	H	SPECIAL CONTRACT REQUIREMENTS					
CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE							
17. <input checked="" type="checkbox"/> CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return three 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. <input type="checkbox"/> AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number RES-00-041 , 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) DAVID F MONTAGUE Sr. Vice President				20A. NAME OF CONTRACTING OFFICER Mary H. Mace			
19B. NAME OF CONTRACTOR BY David F Montague (Signature of person authorized to sign)		19C. DATE SIGNED 9/25/00		20B. UNITED STATES OF AMERICA BY Mary H. Mace (Signature of Contracting Officer)		20C. DATE SIGNED 9-25-00	

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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:

REVIEW AND ANALYSIS OF OPERATIONAL EVENTS FOR ACCIDENT SEQUENCE PRECURSORS

B.2 BRIEF DESCRIPTION OF WORK (MAR 1987)

The contractor shall assess operating experience and document those potential core damage operating events or plant conditions that significantly impact risk for feedback to the NRC regulatory process.

**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 \$1,728,494, of which the sum of \$1,630,655 represents the estimated reimbursable costs, and of which \$97,839 represents the fixed fee.

(b) The total estimated cost to the Government for full performance of the basic contract is \$1,728,494, of which the sum of \$1,630,655 represents the estimated reimbursable costs, and of which \$97,839 represents the fixed fee.

(c) The total estimated cost to the Government for full performance of the option year is \$630,661, of which the sum of \$594,962 represents the estimated reimbursable costs, and of which \$35,699 represents the fixed fee.

(d) 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.

(e) The amount currently obligated by the Government with respect to this contract is \$126,000, of which the sum of \$118,440 represents the estimated reimbursable costs, and of which \$7,560 represents the fixed fee.

(f) It is estimated that the amount currently allotted will cover performance through January 2, 2001.

SECTION C - DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK

The Statement of Work is provided as Attachment A.

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
52.246-8	FEDERAL ACQUISITION REGULATION (48 CFR Chapter 1) INSPECTION OF RESEARCH AND DEVELOPMENT -- COST-REIMBURSEMENT	APR 1984

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
52.242-15	FEDERAL ACQUISITION REGULATION (48 CFR Chapter 1)	
	STOP-WORK ORDER	AUG 1989
	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 (DATE)

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

- (a) Total estimated contract amount.
- (b) Total funds 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.
 - (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. Note: The same information shall 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 above information.

(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 FA 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 (three copies)

Office of Nuclear Regulatory Research
Division of Risk Analysis and Applications
NRC Mail Stop T-9-C4

(b) Contracting Officer (1 copy)

**F.6 RESOLVING NRC CONTRACTOR DIFFERING PROFESSIONAL VIEWS
(DPVs)**

The Nuclear Regulation 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 (1) may differ from a prevailing NRC staff view, (2) disagree with an NRC decision or policy position, or (3) 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 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 performance of the contract, may be found in Section J of the solicitation. 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. NOTE: The prime contractor or subcontractor shall submit all DPV's received by need not endorse them.

**F.7 DURATION OF CONTRACT PERIOD (MAR 1987)
ALTERNATE 2 (MAR 1987)**

This contract shall commence on September 25, 2000 and will expire on September 24, 2003. The term of this contract may be extended at the option of the Government for an additional one-year period..

SECTION G - CONTRACT ADMINISTRATION DATA

G.1 2052.215-71 PROJECT OFFICER AUTHORITY (OCT 1999)

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

Name: Don G. Marksberry

Address: Mail Stop T-9C4
RES/DRAA/OERAB

Telephone Number: (301) 415-6378

(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, approve 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 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 to the instruction or direction 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.

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

(a) Total expenditure for travel may not exceed \$50,000 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	09/25/00 - 09/24/03

(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.

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 4. 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 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 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 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 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.

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:

 Project Manager (PM)/ASP Event Analyst
Assist. PM/Senior ASP Event Analyst
Assist. PM/ASP Event Analyst
Task Engineer
Task 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 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 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 2052.235-70 PUBLICATION OF RESEARCH RESULTS (OCT 1999)

(a) The principal investigator(s)/contractor shall comply with the provisions of NRC Management Directive 3.8 (Vol. 3, Part 1) and NRC Handbook 3.8 (Parts I-IV) regarding publication in refereed scientific and engineering journals or dissemination to the public of any information, oral or written, concerning the work performed under this contract. Failure to comply with this clause shall be grounds for termination of this contract.

(b) The principal investigator(s)/contractor may publish the results of this work in refereed scientific and engineering journals or in open literature and present papers at public or association meetings at interim stages of work, in addition to submitting to NRC the final reports and other deliverables required under this contract. However, such publication and papers shall focus on advances in science and technology and minimize conclusions and/or recommendations which may have regulatory implications.

(c) The principal investigator(s) shall coordinate all such publications with, and transmit a copy of the proposed article or paper to, the NRC Contracting Officer or Project Officer, prior to publication. The NRC agrees to review and provide comments within thirty (30) days after receipt of a proposed publication. However, in those cases where the information to be published is (1) subject

to Commission approval, (2) has not been ruled upon, or (3) disapproved by the Commission, the NRC reserves the right to disapprove or delay the publication. Further, if the NRC disagrees with the proposed publication for any reason, it reserves the right to require that any publication not identify the NRC's sponsorship of the work and that any associated publication costs shall be borne by the contractor.

H.4 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.5 GOVERNMENT FURNISHED EQUIPMENT/PROPERTY - NONE PROVIDED (JUN 1988)

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

H.6 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.

PART II - CONTRACT CLAUSES**SECTION I - CONTRACT CLAUSES****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.

NUMBER	TITLE	DATE
	FEDERAL ACQUISITION REGULATION (48 CFR Chapter 1)	
52.202-1	DEFINITIONS	OCT 1995
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 1995
52.203-7	ANTI-KICKBACK PROCEDURES	JUL 1995
52.203-8	CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY	JAN 1997
52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY	JAN 1997
52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS	JUN 1997
52.204-4	PRINTING/COPYING DOUBLE-SIDED ON RECYCLED PAPER	JUN 1996
52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	JUL 1995
52.215-2	AUDIT AND RECORDS--NEGOTIATION	JUN 1999
52.215-2	AUDIT AND RECORDS--NEGOTIATION	JUN 1999
52.215-8	ORDER OF PRECEDENCE--UNIFORM CONTRACT FORMAT	OCT 1997
52.216-7	ALLOWABLE COST AND PAYMENT	MAR 2000
52.216-8	FIXED-FEE	MAR 1997
52.219-4	NOTICE OF PRICE EVALUATION PREFERENCE FOR HUBZONE SMALL BUSINESS CONCERNS (JAN 1999)	JAN 1999
52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS	OCT 1999
52.219-9	SMALL BUSINESS SUBCONTRACTING PLAN	OCT 1999
52.219-16	LIQUIDATED DAMAGES--SMALL BUSINESS SUBCONTRACTING PLAN	JAN 1999
52.222-3	CONVICT LABOR	AUG 1996
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

52.222-36	AND VETERANS OF THE VIETNAM ERA AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES	JUN 1998
52.222-37	EMPLOYMENT REPORTS ON DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA	JAN 1999
52.223-6	DRUG-FREE WORKPLACE	JAN 1997
52.225-13	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES	JUL 2000
52.227-1	AUTHORIZATION AND CONSENT ALTERNATE I (APR 1984)	JUL 1995
52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT	AUG 1996
52.227-11	PATENT RIGHTS -- RETENTION BY THE CONTRACTOR (SHORT FORM)	JUN 1997
52.228-7	INSURANCE--LIABILITY TO THIRD PERSONS	MAR 1996
52.230-2	COST ACCOUNTING STANDARDS	APR 1998
52.230-6	ADMINISTRATION OF COST ACCOUNTING STANDARDS	APR 1996
52.232-17	INTEREST	JUN 1996
52.232-22	LIMITATION OF FUNDS	APR 1984
52.232-23	ASSIGNMENT OF CLAIMS	JAN 1986
52.232-33	PAYMENT BY ELECTRONIC FUNDS--CENTRAL CONTRACTOR REGISTRATION	MAY 1999
52.233-1	DISPUTES ALTERNATE I (DEC 1991)	MAR 1994
52.233-3	PROTEST AFTER AWARD ALTERNATE I (JUN 1985)	AUG 1996
52.242-1	NOTICE OF INTENT TO DISALLOW COSTS	APR 1984
52.242-3	PENALTIES FOR UNALLOWABLE COSTS	OCT 1995
52.242-4	CERTIFICATION OF FINAL INDIRECT COSTS	JAN 1997
52.242-13	BANKRUPTCY	JUL 1995
52.243-2	CHANGES--COST REIMBURSEMENT ALTERNATE V (APR 1984)	AUG 1987
52.244-2	SUBCONTRACTS ALTERNATE II (AUG 1998)	AUG 1998
52.244-5	COMPETITION IN SUBCONTRACTING	DEC 1996
52.246-23	LIMITATION OF LIABILITY	FEB 1997
52.246-25	LIMITATION OF LIABILITY--SERVICES	FEB 1997
52.247-67	SUBMISSION OF COMMERCIAL TRANSPORTATION BILLS TO THE GENERAL SERVICES ADMINISTRATION FOR AUDIT	JUN 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 52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000)

(a) The Government may extend the term of this contract by written notice to the Contractor within 30 days of contract expiration; provided that the Government gives the Contractor a verbal notification of its intent to extend at least 60 days before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option clause.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed 4 years.

I.3 52.232-25 PROMPT PAYMENT (JUN 1997)

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 section 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 7th 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 received. 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, 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;

(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.

I.4 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):

N/A

PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

SECTION J - LIST OF ATTACHMENTS

ATTACHMENT NUMBER	TITLE	DATE	NO. PAGES
A	STATEMENT OF WORK/SPECIFICATIONS	10/29/99	21
1	ASP EVENT STATUS TABLE	10/29/99	1
2	ASP EVENT TIME LINE	10/29/99	1
3	ASP EVALUATION AND ANALYSIS PROCESS SUMMARY	10/29/99	1
4	SF3381 ACH Vendor Enrollment Form		
5	Billing Instructions - Cost - Reimbursement		

**OFFICE OF NUCLEAR REGULATORY RESEARCH
STATEMENT OF WORK
RES-RES-00-041**

TITLE: Review and Analysis of Operational Events for Accident Sequence Precursors

I. INTRODUCTION

Effective March 29, 1999, the Nuclear Regulatory Commission's (NRC's) Office of Nuclear Regulatory Research (RES) assumed responsibility for certain agency functions, which had formerly been the responsibility of the Office for Analysis and Evaluation of Operational Data (AEOD). These functions include providing a strong, independent capability to analyze and evaluate operational safety data associated with activities licensed by the U.S. Nuclear Regulatory Commission (NRC). In discharging this responsibility, RES now serves as the focal point for the assessment of operational events through the collection, review, analysis, and evaluation of the safety performance of both reactor and nuclear materials facilities.

To accomplish this mission, RES

- 1) collects, analyzes, and disseminates operational data;
 - 2) assesses trends in performance from these data;
 - 3) evaluates operating experience to provide insights into, and to improve the understanding of, the risk significance of events;
 - 4) conducts reliability studies of risk-important systems;
 - 5) analyzes human performance in operating events; and
 - 6) produces periodic Performance Indicator and Accident Sequence Precursor Reports.
- The RES staff also obtains industry feedback on these activities.

The RES programs, taken as a whole, constitute the essential independent review and assessment of power reactor safety performance, and complement the regional and the Office of Nuclear Reactor Regulation (NRR) reviews of operating events. They provide feedback of important operational safety lessons. RES findings and recommendations continue to be addressed through generic correspondence, in the resolution of generic issues, and in initiatives taken by industry.

Within RES, the Division of Risk Analysis and Application (DRAA) plans, develops, and manages a comprehensive anticipatory and confirmatory research program to develop, advance the state of the art, and apply risk assessment methods, including probabilistic risk assessment, to provide a basis to focus regulatory activities on the most risk-significant aspects of licensed activities. As part of this responsibility, DRAA independently assesses operational safety data to determine risk trends and conducts reliability studies and assesses performance indicators based on operational data. DRAA also develops and implements the NRC programs for power reactor performance indicators and accident sequence precursors and maintains databases covering operational and reliability data.

In January 1992, the then-AEOD sponsored a workshop entitled "Use of PRA Methodology for the Analysis of Reactor Events and Operational Data." Based on the results of that workshop, the efforts pursued by the Operating Experience Risk Analysis Branch (OERAB) within DRAA have shifted to more risk-based analyses of operational experience. Tools and procedures have been developed to help in this area, and are documented in the agency's Operating Plan.

The ultimate goal is to be able to trend industry risk based on operating experience. Pursuant to that goal, current trending and analysis activities in OERAB are focused in the following areas:

- 1) accident sequence precursors,
- 2) system reliabilities,
- 3) component reliabilities
- 4) common-cause failures, and
- 5) initiating events.

A key element of OERAB's efforts is the Accident Sequence Precursor (ASP) Program.

II. BACKGROUND

The Risk Assessment Review Group (the Lewis Committee) Report, issued in September 1978, recommended that, "...potentially significant [accident] sequences and precursors, as they occur, be subjected to the kind of analysis contained in WASH-1400." In response to this report, the NRC established the Accident Sequence Precursor (ASP) Program. In SECY-97-076, "PRA Implementation Plan," the ASP Program was explicitly identified as a key ingredient in the NRC's risk-informed regulatory framework. With the NRC's implementation of its improved reactor oversight process, an integral part of this risk-informed, regulatory framework consists of the Significance Determination Process (SDP) as described in SECY-99-007A. Since it estimates the relative risk associated with operational events and conditions, the ASP Program is an important contributor to Phases 2 and 3 of the SDP.

The ASP Program systematically screens, reviews, and analyzes operational events. It identifies and documents accident sequence precursors. Each precursor analysis receives a peer review by the affected licensee, the NRC staff, and by the NRC's independent contractor before being published. Reports have been published covering the periods 1969-79, 1980-81, 1982-83, and every year since 1984.

Future expansion plans for the ASP Program include:

- 1) continuing efforts to make the ASP screening, review, and analysis process more timely by reducing the time between the occurrence of an event and the issuance of the Final Precursor Analysis Document for that event, and
- 2) streamlining the engineering evaluation phase, and
- 3) expanding the analysis capability of the ASP Program to incorporate
 - a) analysis of shutdown/low power events,
 - b) consideration of consequences, and analysis of external initiators, such as

fires, flooding, and seismic events.

Items (1) and (2) of these expansion plans are incorporated within the scope of this SOW.

The ASP Program Plan (originally prepared for approval by the Commission as Enclosure No. 1 to SECY-94-076, dated March 22, 1994, with annual updates every year since) documents this process.

The objectives of the Agency's Accident Sequence Precursor Program are the following:

- 1) to identify and rank the risk significance of operational events,
- 2) to determine the generic implications of an operational event,
- 3) to provide supplemental information on plant-specific performance,
- 4) to provide a check with PRAs, and
- 5) to provide an empirical indication of industry risk and associated trends.

The deliverables from this SOW will assist the Agency in achieving these objectives.

III. OBJECTIVE

The specific objective of this Statement Of Work (SOW) is to assess operating experience and to document those potential core damage operating events or plant conditions that significantly impact risk for feedback to the NRC regulatory process. One of the ways in which this feedback is accomplished is the annual Accident Sequence Precursor (ASP) report, which is described later in this SOW.

IV. SCOPE OF WORK

The tasks of this statement of work (SOW) concern the systematic evaluation of potentially significant operational experience from U. S. commercial nuclear power plants. The evaluations are intended to identify, assess, and rank potentially serious operational incidents. The Accident Sequence Precursor (ASP) evaluations are probabilistic and produce a quantitative measure of significance. The significance measure is the conditional probability of the analyzed event or condition leading to core damage.

The tasks specified below provide timely, systematic, and consistent evaluations of operational experience and timely documentation of precursor event results. The operational experience to be evaluated covers events occurring within the years 1999, 2000, 2001, and 2002. The primary source of experience reviewed will consist of Licensee Event Reports (LERs). These will be supplemented by information obtained from NRC Augmented Inspection Team (AIT) reports, NRC Incident Investigation Team (IIT) reports, or NRC inspection reports, where applicable. In addition, approximately 50 "special" operational events (including events from prior years) may also be evaluated each year for accident sequence precursors.

As promised to the Commission in SECY-95-269, a goal of the ASP Program is to complete the screening, review and analysis of an operational event and issue the final analysis of the event within eight months after the event occurs (nine months once the reporting rule allows Licensees 60 days in lieu of 30 days to notify the agency of an event). The schedules specified for each of the tasks described below have been developed with this goal in mind.

Task 1. Engineering Evaluation

The contractor shall evaluate specific operational experience data provided by the agency and produce a list of events labeled as candidate precursors to complete this task. This initial review is a bounding review to eliminate those that are clearly not important from a risk perspective.

Data Source: The primary source of events furnished by the agency to the contractor will be LERs identified as potential precursors by the screening process conducted at the Oak Ridge National Laboratory (ORNL) using a computerized algorithm with the Sequence Coding and Search System (SCSS) LER Database. Twice a month, the SCSS algorithm will identify, on the average, an estimated 31 LERs which will be considered potential precursors. An estimated total of 750 LERs per year will be delivered in electronic format via email from the SCSS database to the contractor for engineering evaluation under this task. Based upon Licensee reporting events within 30 days of the event date, the SCSS algorithm should deliver events to the contractor within 10 weeks of the event date. Attachment 2 depicts a time table for tasks 1-5. In the event that the LERs are not available in electronic format from SCSS in a timely manner, the agency will furnish hard copies of LERs to the contractor for use in this task.

In addition to the review of LERs for candidate precursors, there will be a number of special event evaluations specified by the agency and furnished to the contractor. About 50 of these special event evaluation requests are anticipated per year. The effort for special event evaluations is estimated to be similar to LER event evaluations.

This engineering evaluation will assess the significance of the event or condition described in the documentation with respect to being a precursor to potential severe core damage. The reviewer(s) shall judge whether the event should be considered for further analysis (Task 2) based on their knowledge of nuclear plant operations and specific plant configurations, as associated with the event's potential to lead to a loss of core cooling and subsequent severe core damage.

Reviewer Experience: The experience level of the reviewers shall be such that they possess considerable knowledge about the design of commercial nuclear power plants, their performance, and operation. The reviewers should also be familiar with the expected response of the plant to various transient and accident initiators. This includes the potential for implementing various recovery measures which might be pursued to mitigate the impact of the specific initiator. In addition, the reviewers should have practical, demonstrated experience with the screening and review of operational experience data (e.g., LERs, NPRDS failure records, NRC inspection reports, NRC AIT reports, etc.). The reviewers should also be familiar with the NRC's regulations and the industry's reporting criteria, (10 CFR 50.73, Licensee Event Reports).

Evaluation Criteria: Identification of candidate precursors requires the review of operational

events for instances in which plant functions that provide protection against core damage have been challenged or compromised. Based on previous experience with reactor plant operational events, it is known that most operational events can be directly or indirectly associated with four initiators:

- 1) Reactor trip [which includes loss of main feedwater (LOFW) within its sequences],
- 2) Loss of offsite power (LOOP),
- 3) Small-break Loss of Coolant Accident (LOCA), and
- 4) Steam generator tube rupture (SGTR) [pressurized-water reactors (PWRs) only].

These four initiators are primarily associated with loss of core cooling. ASP Program staff members examine LERs and other event documentation to determine the impact that operational events have on potential core damage sequences associated with these initiators. (Operational events are occasionally identified that impact other initiators, such as a large-break LOCA. Unique models are developed to address these events.)

Rejected Events: Events are eliminated from further analysis consideration as candidate precursors if they involved only one of the following:

- 1) A component failure with no loss of redundancy and no trip,
- 2) A short-term loss of redundancy in only one system, except for support system failures of a single system identified in the Candidate Precursor section below.
- 3) An event that occurred prior to initial criticality,
- 4) Design or qualification error that is small relative to what is predicted (e.g., an error of a few percent in an actuation set point),
- 5) An event bounded by a reactor trip or an LOFW,
- 6) An event with no appreciable impact on safety systems, or
- 7) An event involving only post-core-damage impacts

Candidate Precursors: Events identified for further analysis as candidate precursors typically include the following:

- 1) Core damage initiators (LOOP, SGTR, and small-break LOCA),
- 2) All events in which a reactor trip was demanded and a safety-related component failed,
- 3) All support systems failures. Including failures that adversely impact front-line systems modeled in SPAR models for these systems:

-
- a) cooling water systems,
 - b) instrument air,
 - c) instrumentation and control, or
 - d) electric power systems
- 4) Any event in which two or more failures in mitigation systems occurred,
- 5) Any event or operating condition that was not predicted or that proceeded differently from the plant design basis, and
- 6) Any event that, based on the reviewers's experience, could have resulted in or significantly affected a chain of events leading to potential severe core damage.

The Event Status Table will be the only mechanism to document the screening effort for rejected events. Codes should be established for frequently utilized rejection reasons to facilitate documentation of this screening effort.

The goal of this effort is to identify those events that meet the criteria for further analysis as candidate precursors.

Any event that clearly meets the ASP Program criteria for further analysis should be identified for analysis as a candidate precursor as input to the process specified in Task 2. Any event that the reviewer cannot readily classify as either a candidate precursor or as clearly rejectable from further consideration must be reviewed by at least one other engineer before a decision can be made whether to analyze the event in detail. Those events requiring a second reviewer during the evaluation process should be annotated on the Event Status Table.

Other Events In addition to candidate precursors and rejected events, there are three "Other Categories" of events:

- 1) containment-related events (CR),
- 2) potentially significant (PS) events considered impractical to analyze, and
- 3) interesting (I) events.

The engineering evaluation may result in a given event being identified as one of these "other" types of events, as follows.

Containment-Related (Other) Events - These are events that involve the loss or potential loss of containment functions [i.e., containment cooling, containment spray, containment isolation (direct paths to the environment only), or hydrogen control]. Containment Related (CR) events are not considered precursors as defined by the ASP Program; however, the potential for increased exposure to the public justifies their inclusion in the Task 6 Annual ASP Report.

Potentially Significant (Other) Events Considered Impractical to Analyze - These events are capable of impacting core damage sequences, but they involve component degradations in which the extent of the degradation could not be determined, or the impact of the degradation on plant response could not be ascertained. Potentially Significant (PS) events are not considered precursors as defined by the ASP Program; however, their potential core damage impact justifies their inclusion in the Task 6 Annual ASP Report.

Interesting (Other) Events - These events usually do not meet the criteria for a precursor, but they provide insight into unusual failure modes with the potential to compromise continued core cooling. Interesting (I) events are not considered precursors as defined by the ASP Program; however, their potential to affect core cooling justifies their inclusion in the Task 6 Annual ASP Report.

Other Event Documentation format - Containment-Related events, Potentially Significant events considered impractical to analyze, and Interesting events will be identified on the event status table and documented by a brief letter report with the following sections:

- 1) Other event summary
- 2) Other event description
- 3) Basis for selection
- 4) Factors of Interest
- 5) References

It is estimated that there will be 7 other events per year.

Monthly Evaluation Cost Tracking Graph (Task 1): Included in the monthly letter status report shall be a combined line/bar graph depicting the monthly average cost and the quantity of events evaluated. The horizontal axis will identify 12 months, beginning with the first month of the contract. The left vertical axis will identify dollars/event evaluated. A height of a single vertical bar for each month will depict that month's average Task 1 evaluation cost per event. A horizontal dashed line will depict the cost per event evaluated that the contractor's proposal was based upon. A text note on the graph will depict a running cost/event average for all months of that contact year depicted on the graph thus far, (i.e average of all vertical bars).

The right vertical axis of this same graph will identify the number of events evaluated. Twelve monthly points will be plotted and connected by a line depicting the quantity of events evaluated each month.

Schedule: The engineering evaluation of an event shall be completed within two weeks of receiving the documentation of the event from the agency.

Results: The engineering evaluation process is estimated to result in 50 events per year identified as candidate precursors; 25 of these are assigned to the contractor to analyze in Task 2, 25 are assigned to the agency to analyze with no contractor assistance. Seven events outside of the 50 candidate precursors are classified as Other events (i.e., containment-related, potentially significant but impractical to analyze, or interesting) and documented in semi-monthly letter reports. The remainder of the events are rejected from further consideration.

Task 2. Preliminary Analysis

The contractor shall perform a detailed, preliminary analysis and quantification of each assigned candidate precursor from Task 1 to identify those that meet the ASP Program criteria as precursors. Preliminary analysis and quantification is estimated to be performed on 25 candidate precursors. The agency will notify the contractor in writing or email when a preliminary analysis and quantification are to be performed on a specified event. The contractor will perform an event quantification that uses the NRC's SAPHIRE-based, standardized, plant-

specific models developed for this effort. Quantification of accident sequence precursor significance involves determination of the conditional probability of severe core damage given the failures or conditions occurring during an event.

Reviewer Experience: The reviewer(s) for this task shall have expert knowledge and experience in the following areas:

- Nuclear power plant system design, performance, and operation
- Probabilistic Risk Assessment (PRA), including familiarity with and access to published PRAs and individual plant examinations (IPEs)
- Application of PRA techniques to assess operational experience
- Construction and review of system fault trees and event trees
- PRA computer codes (e.g., IRRAS, SAPHIRE)

Analysis Criteria: The analysis is intended to identify those events considered to be precursors to potential severe core damage accidents, either because of the initiating event, or because of failures that could have affected the course of postulated off-normal events or accidents. The sources of information for these detailed analyses are not limited to the event reports furnished by the agency, (usually LERs), but also include:

- 1) the plant's final or updated safety analysis reports (FSARs or USARs) and their amendments, and
- 2) individual plant examinations (IPEs), and
- 3) other information related to the event of interest.

The detailed analysis of each event considers the immediate impact of an initiating event or the potential impact of the equipment failures or operator errors on the readiness of systems in the plant for mitigation of off-normal and accident conditions. In the review of each selected event, three general scenarios (involving both the actual event and postulated additional failures) are considered.

- 1) If the event or failure was immediately detectable and occurred while the plant was at power, then the event is analyzed according to the likelihood that it and the ensuing plant response could lead to severe core damage.
- 2) If the event or failure had no immediate effect on plant operation (i.e., if no initiating event occurred), then the review analyzes whether the plant would require the failed items for mitigation of potential severe core damage sequences, should a postulated initiating event occur during the failure period.
- 3) If the event or failure was identified while the plant was not at power, then the event is

first assessed to determine whether it could have impacted at-power operation. If the event could have impacted at-power operation, its impact is assessed. If the event could only occur during shutdown, then its impact on decay heat removal during shutdown is assessed.

For each actual occurrence or postulated initiating event associated with an operational event reported in an LER, the sequence of operation of various mitigating systems required to prevent core damage is considered. Events are selected and documented as precursors to potential severe core damage accidents (accident sequence precursors) if the conditional probability of subsequent core damage is at least 1.0×10^{-6} . Events of low significance are thus excluded, allowing attention to be focused on the more important events. This approach is consistent with the approach used to define 1987-1998 precursors, but differs from that of prior years, in which the Annual Precursor Report addressed all events meeting the precursor selection criteria regardless of conditional core damage probability.

The detailed analysis is not limited to the information in the LER. The analyst shall use Final or Updated Safety Analysis Reports (FSARs or USARs), IPEs, and other available information about the event or condition. The analysis of each event shall consider the immediate impact of an initiating event, or the potential impact of the equipment failures or operator errors on the capability, availability, and reliability of systems in the plant for mitigation of off-normal and accident conditions.

Method: Quantification of accident sequence precursor significance involves determination of a conditional probability of subsequent severe core damage given the failures observed during an operational event. This probability is estimated by mapping failures observed during the event onto the ASP accident sequence models (event trees and linked fault trees modified to reflect the event), which depict potential paths to severe core damage, and calculating a conditional probability of core damage. The effect of a precursor on event tree branches is assessed by reviewing the operational event specifics against system design information. This information is used to modify the ASP model (typically the fault trees). Quantification results in a revised conditional probability of core damage given the operational event. The conditional probability estimated for each candidate precursor is useful in ranking because it provides an estimate of the measure of protection against core damage that remains once the observed failures have occurred. The conditional core damage probability (CCDP) during the time period in which the failures were observed is used to rank the initiating event assessments. The importance measure, the difference between the CCDP and the nominal core damage probability (CDP) for the same period of time, is used to rank the unavailability assessments.

For most events that meet the ASP Program selection criteria, the observed failures significantly impact the core damage model. In these cases, there is little numeric difference between the CCDP and the importance measure that was previously used (CCDP - CDP). For some events, however, the nominal plant response during the time period dominates the results. In these cases, the CCDP can be considerably higher than the importance measure (the impact of such a condition on plant response is relatively minor). By only looking at the CCDP for such an event, its significance may be overestimated. Therefore, for condition assessments, the CCDP, the CDP, and the difference between these values (i.e., the importance) are provided.

The frequencies and failure probabilities used in the calculations are derived in part from data obtained across the population of LWRs.

Additional Information: If additional information is required to perform the analysis, especially that obtainable from licensees, the contractor will notify the agency's technical monitor (via telephone call, with a follow up by e-mail) delineating the specific information and the reason this information is needed. The agency's technical monitor will coordinate the necessary activities to obtain this information within 2 weeks.

Document Rejected Events: Brief individual letter reports will be issued to the agency's technical monitor depicting the reason for the rejection of all events analyzed in this task. Frequently utilized reasons should also be depicted on the Event Status Table as a rejection code. For brevity involving unique event rejection reasons, the Event Status Table may simply refer to the individual letter report for the rejection reason.

Schedule: Each event analysis shall be completed within 7 weeks of receiving the event from the agency. However, if additional information regarding the event is required from the licensee before the analysis can be completed, an additional three weeks will be allowed for the licensee to provide a response to the request. In the event that this time is insufficient, the contractor shall notify the agency so that a revised schedule for completion of the analysis may be generated. It is anticipated that the agency's time between Task 1 and Task 2 will be 1 week to notify the contractor as to which events continued from Task 1 will be analyzed by the contractor in Task 2. The 7 week schedule for this task includes the time for Task 1 evaluation, agency authorization for Task 2 analysis, and the analysis of this Task 2.

Monthly Analysis Cost Tracking Graph (Task 2): Included in the monthly letter status report shall be a combined line/bar graph depicting the monthly average cost for Task 2 analysis per event and the quantity of events analyzed. The horizontal axis will identify 12 months, beginning with the first month of the contract. The left vertical axis will identify dollars/event analyzed. A height of a single vertical bar for each month will depict that month's average analysis cost per event. A horizontal dashed line will depict the cost per event analyzed that the contractor's proposal was based upon. A text note on the graph will depict a running cost/event average for all months of that contact year depicted on the graph thus far, (i.e average of all vertical bars).

The right vertical axis of this same graph will identify the number of events evaluated. Twelve monthly points will be plotted and connected by a line depicting the quantity of events analyzed each month.

Results: The preliminary precursor analysis process is estimated to result in 5 events per year identified as precursors and an estimated 20 brief rejection descriptions issued in semi monthly letter reports. The results of the preliminary analyses of those events identified as precursors shall be documented in a report as specified in Task 3.

Task 3. Preliminary Precursor Analysis Document

An estimated five 1st draft Preliminary Precursor Analysis documents and the associated five 2nd draft Preliminary Precursor Analysis documents will be produced by this task.

For each preliminary analysis whose results satisfy the ASP Program's quantitative criterion for a precursor [conditional core damage probability (CCDP) $\geq 1.0 \times 10^{-6}$], the analyst shall prepare a report documenting the analysis, quantification, and the classification of this event as a precursor. All preliminary analyses from Task 2 that were not rejected or classified as "other" types of events (impractical to analyze, containment-related, "interesting") will be documented by this Task 3. Thus, agency authorization to begin expenditure of effort on this Task 3 is not required for each individual precursor. Documentation of each preliminary analysis must be sufficient to allow a knowledgeable reader to understand the key elements of the analysis, (i.e., sequence of events, equipment malfunctions, human errors, the bases for probability evaluations, key assumptions, and areas of uncertainty.)

Where more than one event documented in an LER or in another type of report is combined with another event to form a precursor, only one of the events shall be denoted as a precursor. The second and subsequent events shall be flagged as impacting the precursor.

The format and structure to be used in the documentation of these analyses is the same that has been used in the analysis of the precursors documented in Appendix B of the annual precursor reports, the most recent of which is NUREG/CR-4674, Volume 26, published in November 1998. The documentation shall be prepared in WordPerfect format.

Agency Comments: A 1st draft Preliminary Precursor Analysis Document for each precursor will be submitted to the agency's technical monitor for comment. All comments on the 1st draft Preliminary Precursor Analysis document shall be resolved by the contractor to the satisfaction of the agency. The 1st draft Preliminary Precursor Analysis Document for each precursor will then be updated to the 2nd draft Preliminary Precursor Analysis Document to incorporate the comment resolutions. The agency anticipates only one week to develop comments on the draft document.

Schedule: The 2nd draft Preliminary Precursor Analysis Document of an event shall be completed within 9 weeks of the contractors receipt of the event. This 9 weeks includes: engineering evaluation (Task 1), preliminary analysis (Task 2), and the document preparation described in this Task 3. This 9 week schedule also includes the anticipated 1 week for the agency to comment on the Task 3, 1st draft deliverable.

Results: Issue 2nd draft Preliminary Precursor Analysis Document for each precursor identified by Task 2. Since this 2nd draft will have been developed from the 1st draft, it will have the same format and structure used for the precursor analysis reports contained in Appendix B to NUREG/CR-4674, Volume 26.

Task 4. Draft Final Precursor Analysis Document

An estimated five 3rd draft Final Precursor Analysis Documents and associated documentation of resolution of comments are to be completed by this task. This third precursor deliverable name changes from "preliminary" to "final".

Method: The contractor shall review the comments on each of the 2nd draft Preliminary Precursor Analysis Documents received from the Licensee, the NRC program offices and regional offices. The contractor shall then prepare proposed responses to the comments for review and approval by the agency. The contractor shall obtain any additional information needed to satisfactorily address the comments, as appropriate, from the NRC, from Licensees, or from the NRC's independent contractor through the agency. Upon agreement with the agency, the contractor shall perform the analysis necessary to address the comments and revise the 2nd draft Preliminary Precursor Analysis Document to the third issued deliverable for a precursor which will now be referred to as the 3rd draft Final Precursor Analysis Document. The title changes for this third precursor deliverable from "preliminary" to "final". All comments received shall be addressed in a separate letter report. This letter report shall have the same format and structure as that of Appendix G of NUREG/CR-4674, Volume 26. When the 3rd draft Final Precursor Analysis Document has been completed, the contractor shall forward it, along with the associated documentation of the resolution of comments, to the agency for review.

Schedule: The 3rd draft Final Precursor Analysis Document and the associated resolution of comments shall be completed and submitted to the agency within three weeks after receipt of all comments on the 2nd draft Preliminary Precursor Analysis Document. The agency anticipates on average, 6 weeks between Task 3 and Task 4 to develop comments.

Results: Issue 3rd draft Final Precursor Analyses Document and associated resolution of comments for all precursors. In the event that the agency' review of this document results in agency acceptance of the document with no comments, there will be no need for the contractor to perform Task 5 for a particular precursor.

Task 5. Final Precursor Analysis Document

An estimated five Final Precursor Analysis Documents and associated documentation of comment resolutions are to be completed by this task.

Method: Upon receiving comments from the agency's Task 4 review of the 3rd draft Final Precursor Analysis Document, and the associated draft resolution of comments, the contractor shall make any revisions to both the draft analysis and draft comment resolutions. The contractor shall then issue a Final Precursor Analysis Document and final comment resolution letter report.

Schedule: In order to meet the timeliness goal of issuing the final analysis of an event within eight months (nine months when Licensee reporting increases to 60 days) after the event occurs, this task shall be completed within two weeks of receiving comments on the 3rd draft Final Precursor Analysis Document and associated draft comment resolutions. It is anticipated that the agency's time between Task 4 and Task 5 to review the 3rd draft Final Precursor Analysis Document and associated comment resolutions should be less than two weeks.

Results: Issue Final Precursor Analysis Document and final comment resolution letter reports for all precursors.

Task 6. Annual Accident Sequence Precursor Report

Refer to the most recent Annual ASP Report (The 1997 Precursor Report) for activities described in this task. Although the purpose of this task is to prepare the annual precursor report for publication as a NUREG/CR report, the contractor's level of effort on the task should take into consideration that much of the report contents will have already been prepared in the appropriate format either as the products of previous tasks, or, in some cases, as the same material that has appeared in previous annual reports in recent years.

In the event the Final Precursor Analysis Document for all calendar year events have not been completed (Task 5), the contractor shall notify the agency and provide a proposed revised schedule for completing the outstanding final analyses to support the issue of the Annual ASP Report, (Task 6).

Method: The front matter (pages i through xv) of the draft Annual ASP Report shall be prepared as follows:

- A) The agency shall prepare the Foreword and provide it to the contractor by September 15th of each year.
- B) The contractor shall prepare the following report material: List of Previous Reports in the Series, Abstract, Table of Contents, List of Figures, List of Tables, Preface, Acknowledgments, List of Acronyms.
- C) The contractor shall prepare Sections 1 (Introduction) and 2 (Selection Criteria and Quantification) using the same material from the previous year's report.
- D) For the first year of the contract only, the contractor shall review the documents of those final analyses of calendar year 2000 precursors completed by the previous contractor (ORNL) in order to obtain the insights and facilitate the precursor data trends and update as necessary to complete this task. An estimated 2 precursor analysis documents from ORNL should be reviewed. These analyses will also be incorporated in the ASP Report.
- E) For all years of this contract, the NRC staff will perform analyses on a selected number of events that are continued from Task 1. The contractor shall review these documents of those final analyses from NRC staff in order to obtain the insights and facilitate the precursor data trends and update as necessary to complete this task. An estimated 5 precursor analysis documents from NRC staff per year should be reviewed. These analyses will also be incorporated in the ASP Report.
- F) The contractor shall prepare Section 3 (Results) using precursor results updated to include the most recently completed calendar year's data.

G) The contractor shall prepare Sections 4 (Glossary) and 5 (References) using the same material from the previous year's report, modified as necessary to incorporate any new material needed to cover the set of precursor analyses for the most recently completed calendar year.

H) The contractor shall prepare Appendix A (ASP Computational Methodology) using the same material from the previous year's report, unless changes to the methodology have been approved by the agency.

I) The contractor shall prepare Appendix B (At-Power precursors for xxxx CY) and Appendix C (Shutdown Precursors for xxxx CY) by assembling all reports of final precursor analyses of events from the most recently completed calendar year.

J) The contractor shall prepare Appendices D (Impractical Events to Analyze), E (Containment-Related Events), F (Interesting Events), and G (Resolution of Comments for CY xxxx Precursor Analyses) using the results of the review and analysis of events from the most recent completed calendar year.

K) The draft Annual ASP Report shall be prepared for publication as a NUREG/CR in WordPerfect format according to the format requirements of NUREG-0650.

Agency Comments: A 1st draft Annual ASP Report will be submitted to the agency's technical monitor for comment. All comments on the 1st draft Annual ASP Report shall be resolved by the contractor to the satisfaction of the agency, and documented by a single comment resolution letter report issued to the agency. The 1st draft Annual ASP Report will then be updated to final status to incorporate the comment resolutions.

Schedule: The 1st draft Annual ASP Report is due October 1. The agency shall furnish comments on the 1st draft Annual ASP Report within two weeks of receipt of the 1st draft Annual ASP Report. The final, camera-ready Annual ASP Report for the most recently completed calendar year is due by October 31, or within two weeks of receipt of the agency's comments, whichever occurs later.

Results: Issue the final Annual ASP Report and resolve all comments for each calendar year.

Task 7. Model Familiarization

This task provides support for the contractor's project staff to familiarize themselves with the improved models being developed by the NRC's Office of Nuclear Regulatory Research (RES) as the improved models are developed. The models currently used in ASP analyses are the Revision 2QA standardized plant analysis risk (SPAR) models. Revision 3.0 of the SPAR models are currently under development. These models are designed for use with the agency's SAPHIRE suite of PRA computer codes. This familiarization will include initial use of the SAPHIRE suite of codes. Since the SPAR models will undergo a systematic QA and checkout by other means, this familiarization shall be limited to:

- 1) use of the specific model to perform trial analyses of three different events,
- 2) review of the results obtained in the trial analyses to determine if they are reasonable, and
- 3) identification of any problems or difficulties encountered with the use of the improved model.

After familiarization is completed, these models will be utilized during the normal course of analyses of Task 2. Any problems with the models encountered during the Task 2 analysis, should be investigated, discussed, and documented in a letter report by this Task 7. All time and efforts associated with model problems should be charged to this Task 7.

A total of five letter reports during the first year are anticipated. For the second and third years of the contract, one such report per year is anticipated. The reports should describe in detail the problem or difficulty encountered, the initial conditions which were input to the model, and the output produced by the code, if available.

Schedule: If any problems or difficulties are encountered, the contractor shall notify the RES Technical Monitor via telephone or e-mail immediately, with a follow-up letter within two weeks documenting the problem, so that corrective action may be taken to resolve the problems in a timely manner. In the event that the trial use of the improved model yields no observable problems, the contractor shall notify the RES Technical Monitor of this result either via telephone or e-mail within 48 hours of completion of the trial model usage. In this case, no letter report is required.

Results: Letter report documenting problems as specified above.

V. REPORTING REQUIREMENTS

Monthly Letter Status Report: Work efforts and progress in each of the above task areas are to be documented in the contractor's monthly letter status report (MLSR). The content of the contractor's monthly report should include the information specified by the contract.

The MLSR shall include cost graphs described in Task 1 and Task 2. The MLSR will be received by the agency by the 20th day of the following month. Ten copies of the report will be mailed to specific agency staff.

Each MLSR task description status shall clearly depict the actual number of events/documents processed in the task as compared to the projected amount on which the contractor's proposal was based, as well as the accumulated totals for that task for the year to date. This will allow trends in the project's progress on each task to be monitored for the purpose of facilitating appropriate corrective action in the event that unanticipated changes occur in the rate of input or output for a given task. For example: 50 events are projected to be analyzed by the project in the first year under Task 2. If half way through the first contract year, more than 25 events have required analysis, the MLSR should reflect this projection error in such a manner that adequate time will be available to modify the contract scope and obtain the necessary resources to

complete the project.

General Event Status Table Requirements: (Example included as Attachment 1)

The Event Status Table does not include events that were completed by the previous contractor (ORNL). The Event Status Table, documents by calendar year event date the disposition of each event processed in tasks 1 through 5 and shall be submitted twice a month to the agency. When an event requires no further processing (i.e. rejected/other) subsequent table columns should be shaded dark. A single Event Status Table should be utilized to document the status of efforts involved with all Tasks 1-5 such that an event can be tracked through the contract process. Rejected events should only be identified in one issue of the table and subsequently be removed to reduce the length of the table while maintaining an accurate representation of all events currently within the process. Task 1-5 calendar year totals at the end of the table will be repeated when event dates within the table span two calendar years.

Once a year, on October 1st, a complete single Calendar Year Event Status Table will be issued including all events rejected by evaluation, rejected by analysis, classified as other and precursors documented for the preceding calendar year. This table should be issued only after all events within the preceding calendar year have completed the process through Task 5.

Task 1 Event Status Table: The contractor shall maintain an Event Status Table (by event date) describing the disposition of each event subjected to evaluation, including the results of each evaluation (e.g., reasons for rejection for each event evaluated as a candidate precursor). This table shall also include the LER number with a short title and document the event date, the date the event was received, the date the evaluation was completed, and whether two reviewers were required to complete the evaluation. The entries in the Event Status Table should be sorted by the date the event was received by the contractor. For those events that are not rejected, the table will annotate whether the subsequent detailed analysis will be performed under Task 2 by the contractor or by the NRC staff. Those other events classified as Containment-Related, Potentially Significant, or Interesting shall also be identified. Those events to be analyzed by NRC staff will be annotated as such and remain identified by each subsequently issued table. .

The end of the Event Status Table should reflect the following calendar year totals (by event date) for Task 1:

- 1) CY number of event evaluations completed and rejected, and
- 2) CY number of other event evaluations completed, and
- 3) CY number of event evaluations completed and continued
(differentiate NRC/Task 2 continuance), and
- 4) CY number of events received and the evaluations are not completed, i.e. "in process".

Task 2 Event Status Table: (Example included as Attachment 1) The contractor shall maintain an Event Status Table describing the disposition of each candidate precursor subjected to analysis as a precursor, including the analysis results [e.g., reasons for rejection or the CCDP, whichever is applicable, or classification as "other" (i.e., impractical to analyze, containment-related, "interesting" event, etc.) type of event] for each candidate precursor analyzed. Those events continued and not rejected by Task 1 but analyzed by NRC staff will be annotated as such and remain identified by each subsequently issued table.

This table shall also document the date the preliminary analysis was completed. If an information request letter is issued, the letter date should be identified and replaced with the date the information is received and the subsequently replaced with the date the analysis is completed.

The end of the Event Status Table should reflect the following calendar year totals (by event date) for Task 2:

- 1) CY number of event analyses completed and candidate precursors rejected, and
- 2) CY number of event analyses completed and candidate precursors continued for documentation in Task 3, and
- 3) CY number of candidate precursors received from Task 1 with the analyses not complete, i.e. "in process".

Task 3 Event Status Table: The contractor shall maintain an Event Status Table describing the status of 2nd draft Preliminary Precursor Analysis Documents. This status shall document the date the 1st draft comments were received and the date each 2nd draft document is completed.

The end of the Event Status Table should reflect the following calendar year totals (by event date) for Task 3:

- 1) CY number of completed 2nd draft Preliminary Precursor Analysis Documents,
- 2) CY number of "in process" 1st/2nd draft Preliminary Precursor Analysis Documents for which the associated Task 2 analysis has been completed.

Task 4 Event Status Table: The contractor shall maintain an Event Status Table describing the status of each 3rd draft Final Precursor Analysis Document. This status shall identify the date all comments were received, the total number of comments and the number of resolved comments. The issue date of the 3rd draft Final Precursor Analysis Document will be also depicted.

The end of the Event Status Table should reflect the following calendar year totals (by event date) for Task 4:

- 1) CY number of completed 3rd draft Final Precursor Analysis Documents,
- 2) CY number of "in process" 3rd draft Final Precursor Analysis Documents for which all comments on the 2nd draft Final Precursor Analysis Document from Task 3 have been received,

Task 5 Event Status Table: The contractor shall maintain an Event Status Table describing the status of each Final Precursor Report. This status shall identify the date all comments were received and total number of comments and the number of resolved comments on the 3rd draft Final Precursor Analysis Document. The issue date of the Final Precursor Analysis Document will be depicted.

The end of the Event Status Table should reflect the following calendar year totals (by event date) for Task 5:

- 1) CY number of completed Final Precursor Analysis Documents,
- 2) CY number of "in process" Final Precursor Analysis Documents for which all comments on the 3rd draft Final Precursor Analysis Document from Task 4 have been

received,

VI. DELIVERABLES AND DELIVERY SCHEDULE

The contractor will prepare 10 copies of each deliverable as outlined below and mail them to specific agency staff. The list of addressees will be provided at a later date.

Task 1 - Engineering Evaluation

- 1) Event Status Table issued by the 8th day and the 22nd day of each month
- 2) Complete single CY Event Status Table issued on October 1st including all CY rejected events
- 3) Brief letter reports documenting Other Events
- 4) Engineering evaluation of an event completed within two weeks of the contractor's receipt of the event. (no written deliverable)

Task 2 - Preliminary Analysis

- 1) Event Status Table issued by the 8th day and the 22nd day of each month.
- 2) Complete CY Event Status Table issued on October 1st.
- 3) Letter Report requiring additional information for some events.
- 4) Brief Letter Report(s) documenting the event rejection reason issued by the 8th day and the 22nd day of each month.
- 5) Preliminary analysis of an event completed within 6 weeks of the contractor's receipt of the event, (no written deliverable).

Task 3 - Preliminary Precursor Analysis Document

- 1) Event Status Table issued by the 8th day and the 22nd day of each month.
- 2) Issue Comment Resolution Letter-Report within 1 week of receipt of agency comments for each preliminary analysis.
- 3) 1st draft Preliminary Precursor Analysis Document of an event completed within 8 weeks of receipt of the event.
- 4) 2nd draft Preliminary Precursor Analysis Document of an event completed within 9 weeks of receipt of the event.

Task 4 - Draft Final Precursor Analysis Document

- 1) Event Status Table issued by the 8th day and the 22nd day of each month.
- 2) Letter Report documenting the draft comment resolutions issued within 2 weeks of contractor's receipt of comments.
- 3) 3rd draft Final Precursor Analysis Document of an event issued within 2 weeks of contractor's receipt of comments .

Task 5 - Final Precursor Analysis Document

- 1) Event Status Table issued by the 8th day and the 22nd day of each month.
- 2) Comment Resolution Letter-Report for Final Precursor Analysis issued within 2 weeks of receipt of agency's comments on the 3rd draft Final Precursor Analysis Document.
- 3) Final Precursor Analysis Document issued within 2 weeks of receipt of agency's comments on 3rd draft Final Precursor Analysis Document..

Task 6 - Annual Accident Sequence Precursor Report

- 1) Issue 1st draft Annual ASP Report by October 1 of each year.
- 2) Issue Comment Resolution Letter-Report within 2 weeks of receipt of agency comments each year.
- 3) Issue Final Annual ASP Report by October 31st or within 2 weeks of receipt of agency comments, whichever occurs later.

Task 7 - Model Familiarization

- 1) Five letter reports documenting problems or difficulties encountered with the use of models should be submitted within two weeks of discovery the first year of the contract.
- 2) One letter report per year for subsequent years.

VII. MEETINGS AND TRAVEL

Project Status Briefings Travel: The contractor shall plan two trips (each of two days duration) per year for two people to travel to NRC Headquarters in Rockville, Maryland, to brief the agency project staff on the progress and status of the project.

ASP Models or Methods Travel: The contractor shall also plan two trips (each of two days duration) per year for two people to participate in meetings providing support to the Accident Sequence Precursor Program to discuss issues and plans regarding models and methods development for the ASP Program.

VIII. LEVEL OF EFFORT

The estimated level of effort for each of the three base years and the one year option period is 4,967 professional hours and 200 clerical hours. The professional level of effort is estimated as follows:

PRA Analyst	2694 hours
Reactor Operations Engineer	1573 hours
Sr. PRA Analyst	700 hours

IX. PERIOD OF PERFORMANCE

This contract will be for an initial base period of three years with a one-year option period.

X. TECHNICAL DIRECTION

The NRC Project Officer will be _____ and the NRC Technical Monitor will be _____

XI. PUBLICATIONS

Deliverables of analyses shall be prepared in WordPerfect format using Times-Roman 11 font. Deliverables documenting preliminary and final analyses shall be prepared in the NUREG-series format (for an example, see Appendix B of NUREG/CR-4674, Volume 26) specified by NUREG-0650, so that they may be inserted directly into the Annual Precursor Report without format modifications.

XII. QUALITY ASSURANCE

Prior to submitting deliverables to the agency, the contractor shall incorporate sufficient review and quality checks to ensure that the deliverable is technically sound, the assumptions made in the analysis are appropriate and have been adequately justified, and that the text documenting the analysis is clear and easy to follow so that the Licensee's staff will be able to complete their review in a timely manner, without the need to obtain clarifying information regarding the analysis.

XIII. NRC-FURNISHED MATERIALS

- 1) LERs identified by the SCSS ASP algorithm as candidate precursors for review. This List of LERs will include an electronic copy of the LER text (without graphic attachments) and will be furnished semi-monthly by the 1st and 15th day of each month. Access to use of the SCSS LER database operating on the Internet will also be provided to the contractor.
- 2) Augmented Investigation Team (AIT) reports, and Incident Investigation Team (IIT) reports,
- 3) 50 Special Events individually described in letter reports from the agency in the format furnishing the information normally in an LER.
- 4) Some ASP analyses may require additional or special information beyond that included in the event report. The Agency's Technical Monitor will furnish this additional information as required. Generally, for LERs this will involve a conference telephone call between the contractor, the NRR Project Manager, and the LER-designated utility contact. In more unusual cases, it may involve a formal request for the NRR Project Manager to obtain the required information from the plant of concern.
- 5) Access to agency's copies of individual plant:
 - Updated Final Safety Analysis Reports
 - IPEs
 - PRAs
 - Plant Information BooksSpecific contractor staff will be processed through NRC Security and authorized as unescorted access to the NRC Headquarters building where the USARs are kept. Contractor's proposals should specifically address the estimated frequency to access this information and the associated costs. The levels of effort estimated within this SOW do not include travel associated with the need to access these documents.

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- 6) The latest version of the Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE), which includes the Integrated Reliability and Risk Assessment System (IRRAS) and the Graphics Evaluation Module (GEM). It is assumed that the contractor will use their own personal computers for running the computer codes contained in this suite of PRA codes and the SPAR models identified in Item (7) below.
 - 7) The Revision 2QA (and, as they become available, the Revision 3.0 models) SPAR models for each operating light-water reactor, which were developed to run on the SAPHIRE and IRRAS software.
 - 8) For the purposes of preparing the Annual ASP report, the agency will furnish each final precursor analysis completed for FY 2000 by the previous contractor (ORNL). These completed analysis reports will have been transmitted to the licensee and released to the general public.
 - 9) NRC Management Directive (MD) 11.1 (MLSR format)
 - 10) The forward to the annual ASP report.
 - 11) NUREG/CR-4674 ORNL/NOAC-232 Vol. 26 Precursors to Potential Severe Core Damage Accidents: 1997 in hard copy and electronic format to aid Task 6 which duplicates much of this material.
 - 12) FY 2000 Final Precursor Analyses completed by the previous contractor (ORNL) to be utilized in the Task 6, ASP Report.
 - 13) Final Precursor Analyses completed by NRC staff each year of the contract to be utilized in the Task 6, ASP Report.

XI. REFERENCES

- 1) Title 10 of the Code of Federal Regulations, Subpart 50.73 (10 CFR 50.73 - the so-called LER Rule).
- 2) "Precursors to Potential Severe Core Damage Accidents: 1969-79, A Status Report," J. W. Minarick and C. A. Kukiela, NUREG/CR-2497, Volumes 1 and 2, June 1982.
- 3) "Precursors to Potential Severe Core Damage Accidents: 1980-81, A Status Report," W. B. Cotrell and J. W. Minarick, NUREG/CR-3591, Volumes 1 and 2, July 1984.
- 4) Precursors to Potential Severe Core Damage Accidents: [Covering Years 1982-1997 in Various Volumes], A Status Report," [Various Authors], NUREG/CR 5674, Volumes 1-26.
- 5) Preparing NUREG-Series Publications, NUREG-0650

- 6) Risk Assessment Review Group (the Lewis Committee) Report, September 1978
- 7) Reactor Safety Study (WASH-1400)
- 8) Memorandum to the Commission, July 26, 1993
- 9) SECY-97-076, PRA Implementation Plan
- 10) SECY-99-007A, Recommendations for Reactor Oversight Process Improvements (Follow-Up to SECY-99-007), March 22, 1999.
- 11) SECY-94-076, Status Report on Accident Sequence Precursor Program and Related Initiatives, March 22, 1994
- 12) SECY-95-269, Status Report on Accident Sequence Precursor Program and Related Initiatives, November 7, 1995

Example
ASP
EVENT STATUS TABLE

Date
(Removed Rejected Events From Previous Report)

Event # Short Title	Event Date	Engineering Evaluation Task 1					Preliminary Analysis Task 2				Preliminary Precursor Analysis Document Task 3	Draft Final Precursor Analysis Document Including Draft Comment Resolutions Task 4				Final Precursor Analysis Document Task 5		
		Date Rec'd	Date Comp'd	Qty of Reviewers	Reject Reason Code(s)	X Reject Other (CR, PS, I) Continue to: ✓ Task 2 ✓ NRC	Date Comp'd (C) Info Ltr (L) Info Rec'd (R)	CCDP	Reject Reason Code(s)	Reject X Continue ✓	Date 1 st Draft Comments Rec'd	Date 2 nd draft Comp'd	Date 2 nd Draft Comments Rec'd	Comments Total # Resolved #	Date 3 rd draft Comp'd	Date 3 rd Draft Comments Rec'd	Comments Total # Resolved #	Date Final Issued
xxx-VV, Dresden Trip w/FW Fail	Date	Date	Date	1	A, F	X												
xxx-YY, Perry Trip	Date	Date	Date	2	-	✓ Task 2	Date (C)	10E-8	M, B	X								
xxx-YY, ANO LOSP	Date	Date	Date	1	-	✓ Task 2	Date (C)	10E-5	-	✓	Date	Date	Date	23/15				
xxx-ZZ, Perry LOFW	Date	Date	Date	1	-	✓ NRC												

CY2000 Total Evaluation Events Rejected

1

CY2000 Total Evaluation Other Events

0

CY2000 Total Evaluation Events Continued NRC Task 2

1

2

CY2000 Total Evaluation Events In Process

0

CY2000 Total Analysis Events Rejected

1

CY2000 Total Analysis Events Continued

1

CY2000 Total Analysis Events In Process

0

CY2000 Total 2nd draft Documents Completed

1

CY2000 Total 1st/2nd draft Documents In Process

0

CY2000 Total 3rd draft Documents Completed

0

CY2000 Total 3rd draft Documents In Process

1

CY2000 Total Final Documents Completed

0

CY2000 Total Final Documents In Process

0

Note: CY totals will be repeated when event dates within the table span two calendar years (i.e. March through September of each year)

SOW Attachment 2

ASP Event Evaluation, Analysis and Documentation Time Line

<u>Contractor</u>	<u>NRC</u>	<u>Item Time</u>	<u>Cumulative Weeks</u>
	Dec 31 st example event	0	0
	Licensee Issues LER (Increases to 60 days)	30 days	4
	SCSS Enters LER	4 weeks	8
	SCSS Algorithm	2 weeks	10
Task 1			
Engineering Evaluation.....		2 weeks	12
	Agency determines Analysis by NRC or Contractor (Task 2).....	1 week	13
Task 2			
Preliminary Analysis.....		4 weeks	17
Task 3			
1 st Draft Preliminary Precursor Analysis Document.....		1 week	18
	Agency comments on 1 st Draft.....	0.5 week	18.5
2 nd Draft Preliminary Precursor Analysis Document.....		0.5 week	19
	Agency requests Licensee and NRC program office comments.....	6 weeks	25
Task 4			
Draft Comment Resolution and 3 rd Draft Final Precursor Analysis Document.....		3 weeks	28
	Agency comments on 3 rd Draft and contractor comment resolutions.....	2 weeks	30
Task 5			
Final Precursor Analysis Document.....		2 weeks	32 (+3 wks additional info) (8 months=35 weeks)
Task 6			
Draft Annual ASP Report (Oct 1 st)		0 weeks	
	Agency Comments	2 weeks	
Final Annual ASP Report (Oct 31 st)		2 weeks	

SOW Attachment 3

**ASP Evaluation & Analysis Process
Summary**

(all figures are per year)

Potential Precursors from Sequence Coding Search System LER database
Furnished by Agency to Contractor
750 LERs + 50 Special Events

Task 1, Engineering Evaluation

Screening 800 Potential Precursors results in 50 Candidate Precursors
25 go to Task 2, (NRC analyzes 25 with no contractor involvement)

Task 2, Preliminary Analysis

25 Candidate Precursors are Analyzed
Letter-reports document 25 candidate precursor rejections
Five events are classified as Precursors

Task 3, Preliminary Precursor Analysis Document

Five 1st draft Preliminary Precursor Documents are issued
Five 2nd draft Preliminary Precursor Documents are issued

Task 4, Draft Final Precursor Analysis Document

Comments on 2nd draft are formally resolved
Five 3rd draft Final Precursor Analysis Documents are issued
(This third precursor deliverable name changes from "preliminary" to "final")

Task 5, Final Precursor Analysis Document

Comments on 3rd draft are formally resolved
5 Final Precursor Analysis Documents are issued

Task 6, Annual ASP Report

One draft ASP Report is issued
One final ASP Report is issued

Task 7, Model Familiarization

Model problems are documented by individual letter reports.