

AWARD/CONTRACT

Page 1

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

2. CONTRACT NO. (Proc. Inst. Ident.) No. NRC-04-90-373	3. EFFECTIVE DATE SEP 19 1990	4. REQUISITION/PURCHASE REQUEST/PROJECT NO. RES-90-373
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5. ISSUED BY Code: U.S. Nuclear Regulatory Commission Div. of Contracts & Property Mgmt. Contract Neg. Branch No. 1; P-1020 Washington, DC 20555 CONTACT - PHONE -	6. ADMINISTERED BY Code: (If other than Item 5) Contract Administration Branch Div. of Contracts & Property Mgmt. Mail Stop P-902 Washington, DC 20555
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7. NAME AND ADDRESS OF CONTRACTOR
Future Resources Associates, Inc.
2000 Center Street, Suite 418
Berkeley, CA 947048. DELIVERY
() FOB ORIGIN
(X) OTHER (See below)Duns Code: 045579935
Facility Code:9. DISCOUNT FOR PROMPT PAYMENT
n/a10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS
SHOWN IN ITEM: 6

11. SHIP TO/ MARK FOR U.S. Nuclear Regulatory Commission Office of Nuclear Regulatory Research Div. of Engineering Tech. MS MLS345 Washington, D.C. 20555	12. PAYMENT WILL CODE BE MADE BY U.S. Nuclear Regulatory Commission Division of Accounting and Finance GOV/COM Accounting Section Washington, DC 20555
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13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION
() 10 U.S.C. 2304(c) () () 41 U.S.C. 253(c) ()14. ACCOUNTING AND APPROPRIATION DATA
0601925040 L16660 31X0200.600 **\$50,000.00**

15A. ITEM NO.	15B. SUPPLIES/ SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
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SBIR Phase I Award "Scoping Analysis of LWR Shutdown
Accidents Initiated by Earthquakes and Internal Fires"15G. TOTAL AMOUNT OF CONTRACT **\$50,000.00**

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

Prescribed by GSA
FAR(48 CFR) 53.214(a)9010010171 900924
PDR CONTR
NRC-04-90-373 PDC

X SEC	DESCRIPTION	PAGE(S)
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CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE

17. (X) CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 2 copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications as are attached or incorporated by reference herein. (Attachments are listed herein.)

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

19A. NAME AND TITLE OF SIGNER (Type or print) <u>ROBERT J. BURNITZ, INT</u>	20A. NAME OF CONTRACTING OFFICER <u>Elois J. Wiggins</u>
19B. NAME OF CONTRACTOR by <u>[Signature]</u> <u>ATURE RESOURCES ASSOCIATES, INC.</u> (Signature of person authorized to sign)	20B. UNITED STATES OF AMERICA by <u>[Signature]</u> (Signature of Contracting Officer)
19C. DATE SIGNED <u>9/2/90</u>	20C. DATE SIGNED <u>9/24/90</u>

Section B - SUPPLIES OR SERVICES AND PRICES/COSTS

B.1 Brief Description of Work

The contractor shall conduct research entitled "Scoping Analysis of LWR Shutdown Accidents Initiated by Earthquakes and Internal Fires"

B.2 Total Fixed Price.....\$50,000.00

Section C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

C.1 Statement of Work

The work to be performed and the objectives to be met in this contract shall be in accordance with the contractor's technical proposal in response to the FY 1990 Small Business Innovation Research Program (SBIR) which is incorporated herein as Attachment 4.

Section D - PACKAGING AND MARKING

D.1 Packaging and Marking

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 closure 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 FAR Citations

The contractor shall refer to Section I, Clause No. 52.252-2 for citations incorporated by reference.

E.2 Notice Listing Contract Clauses Incorporated by Reference

NOTICE: The following solicitation provisions and/or contract clauses pertinent to this section are hereby incorporated by reference:

FEDERAL ACQUISITION REGULATION (48 CFR Chapter 1)

NUMBER	DATE	TITLE
52.246-9	APR 1984	INSPECTION OF RESEARCH AND DEVELOPMENT (SHORT FORM)

Section F - DELIVERIES AND PERFORMANCE

F.1 Notice Listing Contract Clauses Incorporated by Reference

FEDERAL ACQUISITION REGULATION (48 CFR Chapter 1)

NUMBER DATE TITLE

52.212-13 AUG 1989 STOP-WORK ORDER

F.2 Reports, Documentation and Other Deliverable End Items

- a. Letter progress reports in three copies to the Project Officer and one copy to the Contracting Officer shall be due by November 30, 1990, and January 30, 1991.
- b. A final report to include the results of the work performed under this contract shall be submitted to the Project Officer in one camera-ready copy and three copies on March 30, 1991. In addition, one copy of the final report shall be submitted to the Contracting Officer on March 30, 1991.

F.3 Place of Delivery

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

1. (1) Copies to Project Officer:

U.S. Nuclear Regulatory Commission
Attn: R. Robinsch
Office of Nuclear Regulatory Research
Division of Engineering Technology
Mail Stop NLS345
Washington, DC 20555

2. (1) Copy to Contracting Officer:

U.S. Nuclear Regulatory Commission
ATTN: Contracting Officer
Division of Contracts and Property Management
Contract Administration Branch, P-902
Washington, DC 20555

F.4 Duration of Contract Period

This contract shall become effective on September 30, 1990, as specified in Block 3 of the SF-26, and shall continue to completion thereof, on March 30, 1991.

F.5 FAR Citations

The contractor shall refer to Section I, Clause No. 52.252-2 for citations incorporated by reference.

Section G - CONTRACT ADMINISTRATION DATA

G.1 Project Officer Authority (Mar 1987) Alternate II (Mar 1987)

a. The Contracting Officer's authorized representative hereinafter referred to as the Project Officer for this contract is:

Name:	R.C. Robinson
Office Address:	U.S. Nuclear Regulatory Commission Office of Nuclear Regulatory Research Mail Stop NLS-351 Washington, DC 20555
Telephone Number:	301-492-3915

b. The Project Officer is responsible for:

(1) Monitoring Contractor performance and recommending to the Contracting Officer changes in requirements.

(2) Inspecting and accepting products/services provided under the contract.

(3) Reviewing all Contractor invoices/vouchers requesting payment for products/services provided under the contract and making recommendations for approval, disapproval, or suspension.

c. The Project Officer is not authorized to make changes to the express terms and conditions of this contract.

(End of Clause)

G.2 Invoice Requirements

Invoices shall be submitted in an original and 3 copies to:

U.S. Nuclear Regulatory Commission
Division of Contracts and Property Management
Contract Administration Branch - P-902
Washington, D.C. 20555.

To constitute a proper invoice, the invoice must include the following information and/or attached documentation:

1. Name of the business concern and invoice date.
2. Contract number or other authorization for delivery of property or services.
3. Description price and quantity of property and services actually delivered or rendered.
4. Shipping and payment terms.

5. Name (where practicable), title, phone number, and complete mailing address of responsible official to whom payment is to be sent.
6. Other substantiating documentation or information as required by the contract.

G.4 Payment

- a. Payment will be made in the amount of \$10,000 each to the contractor after receipt and acceptance of each of the two letter progress reports as required in Section F.2.a. Payment shall not be made prior to receipt of said progress reports.
- b. Final payment will be made in the amount of \$30,000 to the contractor after receipt and acceptance of the final report as required in Section F.2.b.
- c. All contractor invoices shall identify the contract number and the monthly letter progress report for which payment is claimed.
- d. If this contract provides for a discount, the contract shall indicate the contract's discount terms (Block 9 of Standard Form 26) on the face page of the invoice.

Section H - SPECIAL CONTRACT REQUIREMENTS

H.1 Key Personnel (MAR 1987)

a. The following individuals are considered to be essential to the successful performance of the work hereunder.

Robert J. Budnitz
Peter R. Davis

The Contractor agrees that such personnel shall not be removed from the contract work or replaced without compliance with paragraphs b and c hereof.

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 such personnel with personnel of at least substantially equal ability and qualifications.

c. All requests for approval of substitutions hereunder must be in writing and provide a detailed explanation of the circumstances necessitating the proposed substitutions. They contain a complete resume for the proposed substitute, and other information requested by the Contracting Officer to approve or disapprove the proposed substitution. The Contracting Officer will evaluate such requests and promptly notify the Contractor of his/her approval or disapproval thereof in writing.

d. If the Contracting Officer determines that:

1) 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

2) That the resultant reduction of 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.2 Safety, Health, and Fire Protection

The Contractor shall take all reasonable precautions in the performance of the work under this contract to protect the health and safety of employees and of members of the public and to minimize danger from all hazards to life and property and shall comply with all health, safety, and fire protection regulations and requirements (including reporting requirements) of the Commission and the Department of Labor.

In the event that the Contractor fails to comply with said regulations or requirements, the Contracting Officer 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 order for resumption of work may be issued at the discretion of the Contracting Officer. The Contractor shall make no claim for an extension of time or for compensation or damages by reason of or in connection with such work stoppage.

H.3 Dissemination of Contract Information (OMB Clearance Number 3150-0112)

The Contractor shall not publish, permit to be published, or disseminate to the public any information, oral or written, concerning the work performed under this contract without the prior written consent of the Contracting Officer. Two copies of any information proposed to be published or disseminated shall be submitted to the Contracting Officer. Failure to comply with this clause shall be ground for termination of this contract.

H.4 Private Use of Contract Information and Data (June 1988)

Except as specifically authorized by this contract, or as otherwise approved by the Contracting Officer, information and other data developed or acquired by or furnished to the Contractor in the performance of this contract shall be used only in connection with the work under this contract.

H.5 Drawings, Designs, and Specifications

All drawings, sketches, designs, design data, specifications, notebooks, technical and scientific data, and all photographs, negatives, reports, findings, recommendations, data and memoranda of every description relating thereto, as well as all copies of the foregoing relating to the work or any part thereto, shall be subject to inspection by the Commission at all reasonable times (for which inspection the proper facilities shall be afforded the Commission by the Contractor and its subcontractors), shall be the property of the Government and may be used by the Government for any purpose whatsoever without any claim on the part of the Contractor and its subcontractors and vendors for additional compensation and shall, subject to the right of the Contractor to retain a copy of said material for its own use, be delivered to the Government, or otherwise disposed of by the Contractor either as the Contracting Officer may from time to time direct during the progress of the work or in any event as the Contracting Officer shall direct upon completion or termination of this contract. The Contractor's right of retention and use shall be subject to the security, patent, and use of information provisions, if any, of this contract.

H.6 Contractor Organizational Conflicts of Interest

(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 41 CFR §20-1.5402(f) in the activities covered by this clause.

(c) Work for others. 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 prior to execution of such contractual arrangement.

(d) Disclosure after award.

(1) The contractor warrants that to the best of its knowledge and belief, and except as otherwise set forth in this contract, it does not have any organizational conflicts of interest as defined in 41 CFR §20-1.5402(a).

(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.

(e) Access to and use of information.

(1) If the contractor in the performance of this contract obtains access to information, such as NRC plans, policies, reports, studies, financial plans, internal data protected by the Privacy Act of 1974 (Pub. L. 93-579), or data which has not been released to the public, 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 (Pub. L. 93-579), 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) The contractor shall have, subject to patent and security provisions of this contract, 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 41 CFR §20-1.5402(h), 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 through the contracting officer to the Executive Director for Operations (EDO) in accordance with the procedures outlined in 41 CFR §20-1.5411.

H.7 Government Furnished Equipment/Property- None Provided (June 1988)

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

PART II - CONTRACT CLAUSES

SECTION I - CONTRACT CLAUSES

I.1 Notice Listing Contract Clauses Incorporated by Reference

NOTICE: The following solicitation provisions and/or contract clauses pertinent to this section are hereby incorporated by reference:

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

NUMBER	DATE	TITLE
52.202-1	APR 1984	DEFINITIONS
52.203-1	APR 1984	OFFICIALS NOT TO BENEFIT
52.203-3	APR 1984	GRATUITIES
52.203-5	APR 1984	COVENANT AGAINST CONTINGENT FEES
52.203-6	JUL 1985	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT
52.203-7	OCT 1988	ANTI-KICKBACK PROCEDURES
52.215-1	APR 1984	EXAMINATION OF RECORDS BY COMPTROLLER GENERAL
52.215-2	DEC 1989	AUDIT -- NEGOTIATION
52.215-31	SEP 1987	WAIVER OF FACILITIES CAPITAL COST OF MONEY
52.215-33	JAN 1986	ORDER OF PRECEDENCE
52.219-8	FEB 1990	UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL DISADVANTAGED BUSINESS CONCERNS
52.219-13	AUG 1986	UTILIZATION OF WOMEN-OWNED SMALL BUSINESSES
52.220-3	APR 1984	UTILIZATION OF LABOR SURPLUS AREA CONCERNS
52.222-3	APR 1984	CONVICT LABOR
52.222-26	APR 1984	EQUAL OPPORTUNITY
52.222-35	APR 1984	AFFIRMATIVE ACTION FOR SPECIAL DISABLED AND VIETNAM ERA VETERANS
52.222-36	APR 1984	AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS
52.222-37	JAN 1988	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA
52.227-1	APR 1984	AUTHORIZATION AND CONSENT
52.227-2	APR 1984	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT
52.227-11	JUN 1989	PATENT RIGHTS -- RETENTION BY THE CONTRACTOR (SHORT FORM)
52.227-20	JUN 1987	RIGHTS IN DATA -- SBIR PROGRAM
52.229-3	APR 1984	FEDERAL, STATE, AND LOCAL TAXES
52.229-5	APR 1984	TAXES -- CONTRACTS PERFORMED IN U.S. POSSESSIONS OR PUERTO RICO
52.232-1	APR 1984	PAYMENTS
52.232-11	APR 1984	EXTRAS
52.232-17	APR 1984	INTEREST
52.232-23	JAN 1986	ASSIGNMENT OF CLAIMS
52.233-1	APR 1984	DISPUTES
52.233-3	AUG 1989	PROTEST AFTER AWARD
52.243-1	AUG 1987	CHANGES -- FIXED PRICE ALTERNATE I (APR 1984)
52.245-2	DEC 1989	GOVERNMENT PROPERTY (FIXED-PRICE CONTRACTS)

52.246-25	APR 1984	LIMITATION OF LIABILITY--SERVICES
52.249-8	APR 1984	DEFAULT (FIXED-PRICE SUPPLY AND SERVICE)
52.249-4	APR 1984	TERMINATION FOR THE CONVENIENCE OF THE GOVERNMENT (SERVICES) (SHORT FORM)

I.2 PROMPT PAYMENT (52.232-25) (APR 1989)

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 an electronic funds transfer is made. Definitions of Pertinent terms are set forth in 32.902. All days referred to in this clause are calendar days, unless otherwise specified.

(a) Invoice Payments

(1) For purposes of this clause, "invoice payment" means a Government disbursement of monies to a Contractor under a contract or other authorization for supplies or services accepted by the Government. This includes payments for partial deliveries that have been accepted by the Government, and final cost or fee payments where amounts owed have been settled between the Government and the Contractor.

(2) Except as indicated in subparagraph (a)(3) and paragraph (c) of this clause, the due date for making invoice payments by the designated payment is the later of the following two events:

(1) The 30th day after the designated billing office has received a proper invoice from the Contractor.

(2) 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. However, if the designated billing office fails to annotate the invoice with the actual date of receipt, the invoice payment due date shall be deemed to be the 30th day after the date the Contractor's invoice is dated, provided a proper invoice is received and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(3) The due date on contracts for meat and meat food products, contracts for perishable agricultural commodities, contracts for dairy products, edible fats or oils, and food products prepared from edible fats or oils, and contracts not requiring submission of an invoice shall be as follows:

(1) The due date for meat and 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 further defined in Pub. L. 98-181 to include any edible fresh or frozen poultry meat, an perishable poultry meat food product, fresh eggs, and any perishable egg product, will be as close as possible to, but not later than, the 7th day after product delivery.

(ii) The due date for perishable agricultural commodities, as defined in Section 1(4) of the Perishable Agricultural Commodities Act of 1930 (7 U.S.C. 499a(4)), will be as close as possible to, but not later than, the 10th day after product delivery, unless another date is specified in the contract.

(iii) The due date 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, will be as close as possible to, but not later than the 10th day after the date on which a proper invoice has been received.

(iv) 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.

(4) An invoice is the Contractor's bill or written request for payment under the contract for supplies delivered or services performed. An invoice shall be prepared and submitted to the designated billing office specified in the contract. A proper invoice must include the items listed in subdivisions (a)(4)(i) through (a)(4)(viii) of this clause. If the invoice does not comply with these requirements, then the Contractor will be notified of the defect within 7 days after receipt of the invoice at the designated billing office (3 days for meat and meat food products and 5 days for perishable agricultural commodities, edible fats or oils, and food products prepared from edible fats or oils). Untimely notification will be taken into account in the computation of any interest penalty owed the Contractor in the manner described in subparagraph (a)(6) of this clause.

(i) Name and address of the Contractor.

(ii) Invoice date.

(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 event of a defective invoice.

(viii) Any other information or documentation required by other requirements of the contract (such as evidence of shipment).

(5) An interest penalty shall be paid automatically by the Government, without request from the Contractor, if payment is not made by the due date and the conditions listed in subdivisions (a)(5)(i) through (a)(5)(iii) of this clause are met, if applicable. An interest penalty shall not be paid on contracts awarded to foreign vendors outside the United States for work performed outside the United States.

(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.

(6) The interest penalty shall be 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. 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 payment amount approved by the Government and 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 payment amount and 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 paragraph (a)(4) of this clause, then the due date on the corrected invoice will be adjusted by subtracting 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, if requested by the Contractor.

(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 7th day (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 and meat food products and 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.

(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 \$1.00 need not be paid.

(iv) Interest penalties are not required on payment delays due to disagreement between the Government and 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.

(7) An interest penalty shall also 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)(6) 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.

(8) If this contract was awarded on or after October 1, 1989, a penalty amount, calculated in accordance with regulations issued by the Office of Management and Budget, shall be paid in addition to the interest penalty amount if the Contractor-

(i) Is owed an interest penalty;

(ii) Is not paid the interest penalty within 10 days after the date the invoice amount is paid; and

(iii) Makes a written demand, not later than 40 days after the date the invoice amount is paid, that the agency pay such a penalty.

(b) Contract Financing Payments

(1) For purposes of this clause, "contract financing payment" means a Government disbursement of monies to a Contractor under a contract clause or other authorization prior to acceptance of supplies or services by the Government. Contract financing payments include advance payments, progress payments based on cost under the clause at 52.232-16, Progress Payments, progress payments based on a percentage or stage of completion (32.102(e)(1)) other than those made under the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts, or the clause at 52.232-10, Payments Under Fixed-Price Architect-Engineer Contracts, and interim payments on cost type contracts.

(2) For contracts that provide 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 (insert day as prescribed by Agency head; if not prescribed, insert 30th day) 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.

(3) For advance payments, loans, or other arrangements that do not involve recurrent submissions of contract financing requests, payment shall be made in accordance with the corresponding contract terms or as directed by the Contracting Officer.

(4) Contract financing payments shall not be assessed an interest penalty for payment delays.

(c) 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.

(End of Clause)

1.3 ELECTRONIC FUNDS TRANSFER PAYMENT METHODS (52.232-28) (APR 1989)

Payments under this contract will be made by the Government either by check or electronic funds transfer (through the Treasury Fedline Payment System (FEDLINE) or the Automated Clearing House (ACH)), at the option of the Government. After award, but no later than 14 days before an invoice or contract financing request is submitted, the Contractor shall designate a financial institution for receipt of electronic funds transfer payments, and shall submit this designation to the Contracting Officer or other Government official, as directed.

(a) For payment through FEDLINE, the Contractor shall provide the following information:

(1) Name, address, and telegraphic abbreviation of the financial institution receiving payment.

(2) The American Bankers Association 9-digit identifying number for wire transfers of the financing institution receiving payment if the institution has access to the Federal Reserve Communications System.

(3) Payee's account number at the financial institution where funds are to be transferred.

(4) If the financial institution does not have access to the Federal Reserve Communications System, name, address, and telegraphic abbreviation of the correspondent financial institution through which the financial institution receiving payment obtains wire transfer activity. Provide the telegraphic abbreviation and American Bankers Association identifying number for the correspondent institution.

(b) For payment through ACH, the Contractor shall provide the following information:

(1) Routing transit number of the financial institution receiving payment (same as American Bankers Association identifying number used for FEDLINE).

(2) Number of account to which funds are to be deposited.

(3) Type of depositor account ("C" for checking, "S" for savings).

(4) If the Contractor is a new enrollee to the ACH system, a "Payment Information Form," SF 3881, must be completed before payment can be processed.

(c) In the event the Contractor, during the performance of this contract, elects to designate a different financial institution for the receipt of any payment made using electronic funds transfer procedures, notification of such change and the required information specified above must be received by the appropriate Government official 30 days prior to the date such change is to become effective.

(d) The documents furnishing the information required in this clause must be dated and contain the signature, title, and telephone number of the Contractor official authorized to provide it, as well as the Contractor's name and contract number.

(e) Contractor failure to properly designate a financial institution or to provide appropriate payee bank account information may delay payments of amounts otherwise properly due.

(End of Clause)

I.4 CLAUSES INCORPORATED BY REFERENCE (FAR 52.252-2) (JUN 1988)

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

(End of Clause)

I.5 PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (52.209-6) (MAY 1989)

(a) The Government suspends or debar Contractors to protect the Government's interests. Contractors shall not enter into any subcontract equal to or in excess of \$25,000 with a Contractor that has been debarred, suspended, or proposed for debarment unless there is a compelling reason to do so. If a Contractor intends to subcontract with a party that is debarred, suspended, or proposed for debarment (see FAR 9.404 for information on the list of Parties Excluded from Procurement Programs), a corporate officer or designee of the Contractor shall notify the

Contracting Officer, in writing, before entering into such subcontract. The notice must include the following:

- (1) The name of the subcontractor;
 - (2) The Contractor's knowledge of the reasons for the subcontractor being on the list of Parties Excluded from Procurement Programs;
 - (3) The compelling reason(s) for doing business with the subcontractor notwithstanding its inclusion on the list of Parties Excluded from Procurement Programs; and
 - (4) The systems and procedures the Contractor has established to ensure that it is fully protecting the Government's interests when dealing with such subcontractor in view of the specific basis for the party's debarment, suspension, or proposed debarment.
- (b) The Contractor's compliance with the requirements of 52.209-6 will be reviewed during Contractor Purchasing System Reviews (see FAR Subpart 44.3).

(End of Clause)

I.6 DRUG-FREE WORKPLACE (FAR 52.223-6) (JUL 1990)

(a) Definitions. As used in this clause, "Controlled Substances" means a controlled substance in schedules I through V of section 202 of the Controlled Substances Act (21 U.S.C. 812) and as further defined in regulation at 21 CFR 1308.11-1308.15.

"Conviction" means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes.

"Criminal drug statute" means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, possession or use of any controlled substance.

"Drug-free workplace" means the site(s) for the performance of work done by the Contractor in connection with a specific contract at which employees of the Contractor are prohibited from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance.

"Employee" means an employee of a Contractor directly engaged in the performance of work under a Government contract. "Directly engaged" is defined to include all direct cost employees and any other Contractor employee who has other than a minimal impact or involvement in contract performance.

"Individual" means an offeror/contractor that has no more than one employee including the offeror/contractor.

- (b) The Contractor, if other than an individual, shall--within 30

calendar days after award (unless a longer period is agreed to in writing for contracts of 30 calendar days or more performance duration); or as soon as possible for contracts of less than 30 calendar days performance duration--

(1) Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;

(2) Establish an ongoing drug-free awareness program to inform such employees about-

(i) The dangers of drug abuse in the workplace;

(ii) The contractor's policy of maintaining a drug-free workplace;

(iii) Any available drug counseling, rehabilitation, and employee assistance programs; and

(iv) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.

(3) Provide all employees engaged in performance of the contract with a copy of the statement required by subparagraph (b)(1) of this clause;

(4) Notify such employees in writing in the statement required by subparagraph (b)(1) of this clause, that as a condition of continued employment on this contract, the employee will-

(i) Abide by the terms of the statement; and

(ii) Notify the employer in writing of the employee's conviction under a criminal drug statute for a violation occurring in the workplace no later than 5 days after such conviction;

(5) Notify the Contracting Officer in writing within 10 calendar days after receiving notice under subdivision (b)(4)(ii) of this clause, from an employee or otherwise receiving actual notice of such conviction. The notice shall include the position title of the employee;

(6) Within 30 days after receiving notice under subparagraph (b)(4)(ii) of this clause of a conviction, take one of the following actions with respect to any employee who is convicted of a drug abuse violation occurring in the workplace:

(i) Taking appropriate personnel action against such employee, up to and including termination; or

(ii) Require such employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency.

(7) Make a good faith effort to maintain a drug-free workplace through implementation of subparagraphs (b)(1) through (b)(6) of this clause.

(c) The Contractor, if an individual, agrees by award of the contract or acceptance of a purchase order, not to engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in the performance of this contract.

(d) In addition to other remedies available to the Government, the Contractor's failure to comply with the requirements of paragraphs (b) or (c) of this clause may, pursuant to FAR 23.506, render the Contractor subject to suspension of contract payments, termination of the contract for default, and suspension or debarment.

(End of Clause)

I.7 RESTRICTIONS ON CONTRACTING WITH SANCTIONED PERSONS (52.225-13)
(MAY 1989)

(a) Definitions. (1) "Component part," means any article which is not usable for its intended functions without being imbedded or integrated into any other product and which, if used in production of a finished product, would be substantially transformed in that process.

(2) "Finished product," means any article which is usable for its intended function without being imbedded in, or integrated into, any other product. It does not include an article produced by a person, other than a sanctioned person, that contains parts or components of the sanctioned person if the parts or components have been substantially transformed during production of the finished product.

(3) "Sanctioned person," means a company or other foreign person upon whom prohibitions have been imposed.

(4) "Substantially transformed," when referring to a component part or finished product, means that the part or product has been subjected to a substantial manufacturing or processing operation by which the part or product is converted or combined into a new and different article of commerce having a new name, character, and use.

(b) General. Section 2443 of the Multilateral Export Control Enhancement Amendments Act (Pub. L. 100-418) and Executive Order 12661, effective December 28, 1988, impose, for a period of 3 years, with certain exceptions, a prohibition on contracting with, or procuring (including rental and lease/purchase) directly or indirectly the products or services of (1) Toshiba Machine Company, (2) Kongsberg Trading Company, (3) Toshiba Corporation, or (4) Kongsberg Vaapenfabrikk. The Act and Executive Order also prohibit, for the same 3-year period, the importation into the United States of all products produced by Toshiba Machine Company and Kongsberg Trading Company. These prohibitions also apply to subsidiaries, successor entities or joint ventures of Toshiba Machine Company or Kongsberg Trading Company.

(c) Restriction. Unless listed by the Contractor in its offer, in the solicitation provision at FAR 52.225-12, Notice of Restrictions on Contracting with Sanctioned Persons, or unless one of the exceptions in paragraph (d) of this clause applies, the Contractor agrees that no products or services delivered to the Government under this contract will be products or services of a sanctioned person.

(d) Exceptions. The restrictions apply --

(1) To finished products of a nonsanctioned person containing components of a sanctioned person if these components have been substantially transformed during the manufacture of the finished product.

(2) To products or services of a sanctioned person provided --

(i) The products are designed to the specifications of a nonsanctioned person marketed under the trademark, brand or name of the nonsanctioned person;

(ii) The business relationship between the nonsanctioned person and the sanctioned person clearly existed prior to June 30, 1987; and

(iii) The nonsanctioned person is not directly or indirectly owned by a sanctioned person.

(3) If a determination has been made in accordance with FAR 25.1003 (a) or (b).

(e) Award. Award of any contract resulting from this solicitation will not affect the Contractor's obligation to comply with importation regulations of the Secretary of the Treasury.

(End of clause)

I.8 DISCOUNTS FOR PROMPT PAYMENT (52.232-8) (APR 1989)

(a) Discounts for prompt payment will not be considered in the evaluation of offers. However, any offered discount will form a part of the award, and will be taken if payment is made within the discount period indicated in the offer by the offeror. As an alternative to offering a prompt payment discount in conjunction with the offer, offerors awarded contracts may include prompt payment discounts on individual invoices.

(b) In connection with any discount offered for prompt payment, time shall be computed from the date of the invoice. For the purpose of computing the discount earned, payment shall be considered to have been made on the date which appears on the payment check or the date on which an electronic funds transfer was made.

(End of Clause)

I.9 CLAUSES INCORPORATED BY REFERENCE (FAR 52.252-2) (Jun 1988)

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

(End of Clause)

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

Section J - List of Attachments

Attachment Number	Title
1	NRC Contractor Organizational Conflicts of Interest
2	NRC Manual Chapter 3202
3	Billing Instructions for Fixed Price Contracts
4	Contractor's Technical Proposal in response to the FY90 Small Business Innovation Research Program (SBIR)

PART 20-1 -- GENERAL

Subpart 20-1.54--Contractor Organizational Conflicts of Interest

Sec.	
20-1.5401	Scope and policy.
20-1.5402	Definitions.
20-1.5403	Criteria for recognizing contractor organizational conflicts of interest.
20-1.5404	Representation.
20-1.5405	Contract clauses.
20-1.5405-1	General contract clause.
20-1.5405-2	Special contract provisions.
20-1.5406	Evaluation, findings, and contract award.
20-1.5407	Conflicts identified after award.
20-1.5408	(Reserved)
20-1.5409	(Reserved)
20-1.5410	Subcontractors.
20-1.5411	Waiver.
20-1.5412	Remedies.

AUTHORITY: Sec. 8, Pub. L. 95-601, adding Sec. 170A to Pub. L. 83-703, 68 Stat. 919, as amended (42 U.S.C. ch. 14)

20-1.5401 Scope and Policy

(a) It is the policy of the U.S. Nuclear Regulatory Commission (NRC) to avoid, eliminate or neutralize contractor organizational conflicts of interest. The NRC achieves this objective by requiring all prospective contractors to submit information describing relationships, if any, with organizations or persons (including those regulated by NRC) which may give rise to actual or potential conflicts of interest in the event of contract award.

(b) Contractor conflict of interest determinations cannot be made automatically or routinely; the application of sound judgment on virtually a case-by-case basis is necessary if the policy is to be applied so as to satisfy the overall public interest. It is not possible to prescribe in advance a specific method or set of criteria which would serve to identify and resolve all of the contractor conflict of interest situations which might arise; however, examples are provided in these regulations to guide application of the policy. NRC contracting and program officials must be alert to other situations which may warrant application of this policy guidance. The ultimate test is: Might the contractor, if awarded the contract, be placed in a position where its judgment may be biased, or where it may have an unfair competitive advantage?

(c) The conflict of interest rule contained in this subpart applies to contractors and offerors only. Individuals or firms who have other relationships with NRC (e.g., parties to a licensing proceeding) are not covered by this regulation. This rule does not apply to the acquisition of consulting services through the personnel appointment process, NRC

agreements with other government agencies, international organizations, or state, local or foreign governments; separate procedures for avoiding conflicts of interest will be employed in such agreements, as appropriate.

20-1.5402 Definitions

(a) "Organizational conflicts of interest" means that a relationship exists whereby a contractor or prospective contractor has present or planned interests related to the work to be performed under an NRC contract which: (1) May diminish its capacity to give impartial, technically sound, objective assistance and advice or may otherwise result in a biased work product, or (2) may result in its being given an unfair competitive advantage.

(b) "Research" means any scientific or technical work involving theoretical analysis, exploration, or experimentation.

(c) "Evaluation activities" means any effort involving the appraisal of a technology, process, product, or policy.

(d) "Technical consulting and management support services" means internal assistance to a component of the NRC in the formulation or administration of its programs, projects, or policies which normally require the contractor to be given access to information which has not been made available to the public or proprietary information. Such services typically include assistance in the preparation of program plans; and preparation of preliminary designs, specifications, or statements of work.

(e) "Contract" means any contract, agreement, or other arrangement with the NRC except as provided in Section 20-1.541(c).

(f) "Contractor" means any person, firm, unincorporated association, joint venture, co-sponsor, partnership, corporation, affiliates thereof, or their successors in interest, including their chief executives, directors, key personnel (identified in the contract), proposed consultants or subcontractors, which is a party to a contract with the NRC.

(g) "Affiliates" means business concerns which are affiliates of each other when either directly or indirectly one concern or individual controls or has the power to control another, or when a third party controls or has the power to control both (41 CFR §1-1.606-1(e)).

(h) "Subcontractor" means any subcontractor of any tier which performs work under a contract with the NRC except subcontracts for supplies and subcontracts in amounts of \$10,000 or less.

(i) "Prospective contractor" or "offeror" means any person, firm, unincorporated association, joint venture, partnership, corporation, or affiliates thereof, including its chief executive, directors, key personnel (identified in the proposal), proposed consultants, or subcontractors, submitting a bid or proposal, solicited or unsolicited, to the NRC to obtain a contract.

(j) "Potential conflict of interest" means that a factual situation exists that suggests (indicates) that an actual conflict of interest may arise from award of a proposed contract. The term "potential conflict of interest" is used to signify those situations which merit investigation prior to contract award in order to ascertain whether award would give rise to an actual conflict or which must be reported to the contracting officer for investigation if they arise during contract performance.

§ 20-1.5403 Criteria for recognizing contractor organizational conflicts of interest

(a) General. Two questions will be asked in determining whether actual or potential organizational conflicts of interest exist: (1) Are there conflicting roles which might bias a contractor's judgment in relation to its work for the NRC? (2) May the contractor be given an unfair competitive advantage based on the performance of the contract? The ultimate determination by NRC as to whether organizational conflicts of interest exist will be made in light of common sense and good business judgment based upon the relevant facts disclosed and the work to be performed. While it is difficult to identify and to prescribe in advance a specific method for avoiding all of the various situations or relationships which might involve potential organizational conflicts of interest, NRC personnel will pay particular attention to proposed contractual requirements which call for the rendering of advice, consultation or evaluation activities or similar activities that lay direct groundwork for the NRC's decisions on regulatory activities, future procurements, and research programs.

(b) Situations or relationships which may give rise to organizational conflicts of interest. (1) The offeror or contractor shall disclose information concerning relationships which may give rise to organizational conflicts of interest under the following circumstances:

(i) Where the offeror or contractor provides advice and recommendation to the NRC in a technical area in which it is also providing consulting assistance in the same area to any organization regulated by the NRC.

(ii) Where the offeror or contractor provides advice to the NRC on the same or similar matter in which it is also providing assistance to any organization regulated by the NRC.

(iii) Where the offeror or contractor evaluates its own products or services, or the products or services of another entity where the offeror or contractor has been substantially involved in their development or marketing.

(iv) Where the award of a contract would otherwise result in placing the offeror or contractor in a conflicting role in which its judgment may be biased in relation to its work for the NRC or may otherwise result in an unfair competitive advantage for the offeror or contractor.

(2) The contracting officer may request specific information from an offeror or contractor or may require special contract provisions such as provided in 129-1.9405-2 in the following circumstances:

(i) Where the offeror or contractor prepares specifications which are to be used in competitive procurements of products or services covered by such specifications.

(ii) Where the offeror or contractor prepares plans for specific approaches or methodologies that are to be incorporated into competitive procurements using such approaches or methodologies.

(iii) Where the offeror or contractor is granted access to information not available to the public concerning NRC plans, policies, or programs which could form the basis for a later procurement action.

(iv) Where the offeror or contractor is granted access to proprietary information of its competitors.

(v) Where the award of a contract might otherwise result in placing the offeror or contractor in a conflicting role in which its judgment may be biased in relation to its work for the NRC or may otherwise result in an unfair competitive advantage for the offeror or contractor.

(c) Policy application guidance. The following examples are illustrative only and are not intended to identify and resolve all contractor organizational conflict of interest situations. (1) Example. The XYZ Corp., in response to a request for proposal (RFP), proposes to undertake certain analyses of a reactor component as called for in the RFP. The XYZ Corp. is one of several companies considered to be technically well qualified. In response to the inquiry in the RFP, the XYZ Corp. advises that it is currently performing similar analyses for the reactor manufacturer.

Guidance. An NRC contract for that particular work normally would not be awarded to the XYZ Corp. because it would be placed in a position in which its judgment could be biased in relationship to its work for NRC. Since there are other well-qualified companies available, there would be no reason for considering a waiver of the policy.

(2) Example. The ABC Corp., in response to a RFP, proposes to perform certain analyses of a reactor component which are unique to one type of advanced reactor. As is the case with other technically qualified companies responding to the RFP, the ABC Corp. is performing various projects for several different utility clients. None of the ABC Corp. projects have any relationship to the work called for in the RFP. Based on the NRC evaluation, the ABC Corp. is considered to be the best qualified company to perform the work outlined in the RFP.

Guidance. An NRC contract normally could be awarded to the ABC Corp. because no conflict of interest exists which would motivate bias with respect to the work. An appropriate clause would be included in the contract to preclude the ABC Corp. from subsequently contracting for work during the performance of the NRC contract with the private sector which could create a conflict. For example, ABC Corp. would be precluded from the performance of similar work for the company developing the advanced reactor mentioned in the example.

(3) Example. As a result of operating problems in a certain type of commercial nuclear facility, it is imperative that NRC secure specific data on various operational aspects of that type of plant so as to assure adequate safety protection of the public. Only one manufacturer has extensive experience with that type of plant. Consequently, that company is the only one with whom NRC can contract which can develop and conduct the testing programs required to obtain the data in reasonable time. That company has a definite interest in any NRC decisions that might result from the data produced because those decisions affect the reactor's design and thus the company's costs.

Guidance. This situation would place the manufacturer in a role in which its judgment could be biased in relationship to its work for NRC. Since the nature of the work required is vitally important in terms of NRC's responsibilities and no reasonable alternative exists, a waiver of the policy may be warranted. Any such waiver shall be fully documented and coordinated in accordance with the waiver provisions of this policy with particular attention to the establishment of protective mechanisms to guard against bias.

(4) Example. The ABC Co. submits a proposal for a new system for evaluating a specific reactor component's performance for the purpose of developing standards that are important to the NRC program. The ABC Co. has advised NRC that it intends to sell the new system to industry once its practicability has been demonstrated. Other companies in this business are using older systems for evaluation of the specific reactor component.

Guidance. A contract could be awarded to the ABC Co. provided that the contract stipulates that no information produced under the contract will be used in the contractor's private activities unless such information has been reported to NRC. Information which is reported to NRC by contractor will normally be disseminated by NRC to others so as to preclude an unfair competitive advantage that might otherwise accrue. When NRC furnishes information to the contractor for the performance of contract work, it shall not be used in the contractor's private activities unless such information is generally available to others. Further, the contract will stipulate that the contractor will inform the NRC contracting officer of all situations in which the information developed under the contract is proposed to be used.

(5) Example. The ABC Corp., in response to a RFP proposes to assemble a map showing certain seismological features of the Appalachian fold belt. In accordance with the representation in the RFP and §20-1.5403(b)(1)(i), ABC Corp. informs the NRC that it is presently doing seismological studies for several utilities in the Eastern United States but none of the sites are within the geographic area contemplated by the NRC study.

Guidance. The contracting officer would normally conclude that award of a contract would not place ABC Corp. in a conflicting role where its judgment might be biased. The work for others clause of §20-1.5405-1(c) would preclude ABC Corp. from accepting work during the term of the NRC contract which could create a conflict of interest.

(d) Other considerations. (1) The fact that the NRC can identify and later avoid, eliminate, or neutralize any potential organizational conflicts arising from the performance of a contract is not relevant to a determination of the existence of such conflicts prior to the award of a contract.

(2) It is not relevant that the contractor has the professional reputation of being able to resist temptations which arise from organizational conflicts of interest, or that a follow-on procurement is not involved, or that a contract is awarded on a competitive or a sole source basis.

§20-1.5404 Representation

(a) The following procedures are designed to assist the NRC contracting officer in determining whether situations or relationships exist which may constitute organizational conflicts of interest with respect to a particular offeror or contractor.

(b) Representation procedure. The following organizational conflicts of interest representation provision shall be included in all solicitations and unsolicited proposals for: (1) Evaluation services or activities; (2) technical consulting and management support services; (3) research; and (4) other contractual situations where special organizational conflicts of interest provisions are noted in the solicitation and would be included in the resulting contract. This representation requirement shall also apply to all modifications for additional effort under the contract except those issued under the "changes" clause. Where, however, a statement of the type required by the organizational conflicts of interest representation provision has previously been submitted with regard to the contract being modified, only an updating of such statement shall be required.

ORGANIZATIONAL CONFLICTS OF INTEREST REPRESENTATION

I represent to the best of my knowledge and belief that:

The award to _____ of a contract or the modification of an existing contract does () or does not () involve situations or relationships of the type set forth in 41 CFR §20-1.5403(b)(1).

(c) Instructions to offerors. The following shall be included in all NRC solicitations: (1) If the representation as completed indicates that situations or relationships of the type set forth in 41 CFR §20-1.5403(b)(1) are involved, or the contracting officer otherwise determines that potential organizational conflicts exist, the offeror shall provide a statement in writing which describes in a concise manner all relevant facts bearing on his representation to the contracting officer. If the contracting officer determines that organizational conflicts exist, the following actions may be taken: (i) Impose appropriate conditions which avoid such conflicts, (ii) disqualify the offeror, or (iii) determine that it is otherwise in the best interest of the United States to seek award of the contract under the waiver provisions of §20-1.5411.

(2) The refusal to provide the representation required by §20-1.5404(b) or upon request of the contracting officer the facts required by §20-1.5404(c), shall result in disqualification of the offeror for award. The nondisclosure or misrepresentation of any relevant interest may also result in the disqualification of the offeror for award; or if such nondisclosure or misrepresentation is discovered after award, the resulting contract may be terminated. The offeror may also be disqualified from subsequent related NRC contracts and be subject to such other remedial actions provided by law or the resulting contract.

(d) The offeror may, because of actual or potential organizational conflicts of interest, propose to exclude specific kinds of work from the statements of work contained in a RFP unless the RFP specifically prohibits such exclusion. Any such proposed exclusion by an offeror will be considered by the NRC in the evaluation of proposals. If the NRC considers the proposed excluded work to be an essential or integral part of the required work and its exclusion would work to the detriment of the competitive posture of the other offerors, the proposal must be rejected as unacceptable.

(e) The offeror's failure to execute the representation required by subsection (b) above with respect to invitation for bids will be considered to be a minor informality, and the offeror will be permitted to correct the omission.

§ 20-1.5405 Contract clauses

§ 20-1.5405-1 General contract clause

All contracts of the types set forth in §20-1.5404(b) shall include the following clauses:

(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 interest (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 herein shall apply to performance or participation by the contractor as defined in 41 CFR §20-1.5402(f) in the activities covered by this clause.

(c) Work for others. 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 who are employed full time under this contract and employees designated as key personnel, if any, under this contract abide by the provision of this clause. If the contractor believes with respect to itself or any such 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 prior to execution of such contractual arrangement.

(d) Disclosure after award. (1) The contractor warrants that to the best of its knowledge and belief and except as otherwise set forth in this contract, it does not have any organizational conflicts of interest, as defined in 41 CFR §20-1.5402(a).

(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 shall 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 for convenience if it deems such termination to be in the best interests of the government.

(e) Access to and use of information. (1) If the contractor in the performance of this contract obtains access to information, such as NRC plans, policies, reports, studies, financial plans, internal data protected by the Privacy Act of 1974 (Pub. L. 93-579), or data which has not been released to the public, the contractor agrees not to: (1) Use such information for any private purpose until the information has been released to the public; (ii) compete for work for the Commission based

on such information for a period of six (6) months after either the completion of this contract or the release of such information to the public, whichever is first, (iii) submit an unsolicited proposal to the government based on such information until one year after the release of such information to the public, or (iv) release the information without prior written approval by the contracting officer unless such 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 (Pub. L. 93-579), or other confidential or privileged technical, business, or financial information under this contract, the contractor shall treat such information in accordance with restrictions placed on use of the information.

(3) The contractor shall have, subject to patent and security provisions of this contract, 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 41 CFR §20-1.5402(h), the contractor shall include this clause, including this paragraph, in subcontracts of any tier. The terms "contract," "contractor," and "contracting officer," shall be appropriately modified to preserve the government's rights.

(g) Remedies. For breach of any of the above proscriptions or for intentional nondisclosure or misrepresentation of any relevant interest required to be disclosed concerning this contract or for such erroneous representations as necessarily imply bad faith, the government may terminate the contract for default, disqualify the contractor from subsequent contractual efforts, and pursue other remedies as may be permitted by law or this contract.

(h) Waiver. A request for waiver under this clause shall be directed in writing through the contracting officer to the Executive Director for Operations (EDO) in accordance with the procedures outlined in §20-1.5411.

§20-1.5405-2 Special contract provisions.

(a) If it is determined from the nature of the proposed contract that organizational conflicts of interest exist, the contracting officer may determine that such conflict can be avoided or after obtaining a waiver in accordance with §20-1.5411, neutralized through the use of an appropriate special contract provision. If appropriate, the offeror may negotiate the terms and conditions of these clauses, including the extent and time period of any such restriction. These provisions include but are not limited to:

(1) Hardware exclusion clauses which prohibit the acceptance of production contracts following a related nonproduction contract previously performed by the contractor;

(2) Software exclusion clauses;

(3) Clauses which require the contractor (and certain of his key personnel) to avoid certain organizational conflicts of interest; and

(4) Clauses which provide for protection of confidential data and guard against its unauthorized use.

(b) The following additional contract clause may be included as section (1) in the clause set forth in § 20-1.5405-1 when it is determined that award of a follow-on contract would constitute an organizational conflict of interest.

(1) Follow-on effort. (1) 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 shall 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 such products or services.

(2) If the contractor under this contract prepares a complete or essentially complete statement of work or specifications, the contractor shall be ineligible to perform or participate in the initial contractual effort which is based on such statement of work or specifications. The contractor shall not incorporate its products or services in such statement of work or specifications unless so directed in writing by the contracting officer, in which case the restriction in this subparagraph shall not apply.

(3) Nothing in this paragraph shall preclude the contractor from offering or selling its standard commercial items to the government.

§ 20-1.5406 Evaluation, findings, and contract award

The contracting officer will evaluate all relevant facts submitted by an offeror pursuant to the representation requirements of § 20-1.5404(b) and other relevant information. After evaluating this information against the criteria of § 20-1.5403, a finding will be made by the contracting officer whether organizational conflicts of interest exist with respect to a particular offeror. If it has been determined that conflicts of interest exist, then the contracting officer shall either:

(a) Disqualify the offeror from award,

- (b) Avoid or eliminate such conflicts by appropriate measures; or
- (c) Award the contract under the waiver provision of § 20-1.5411.

§ 20-1.5407 Conflicts: identified after award.

If potential organizational conflicts of interest are identified after award with respect to a particular contractor, the contracting officer determines that such conflicts do, in fact, exist and that it would not be in the best interests of the government to terminate the contract as provided in the clauses required by § 20-1.5405, the contracting officer will take every reasonable action to avoid, eliminate, or, after obtaining a waiver in accordance with § 20-1.5411, neutralize the effects of the identified conflict.

§ 20-1.5408 (Reserved)

§ 20-1.5409 (Reserved)

§ 20-1.5410 Subcontracts

The contracting officer shall require offerors and contractors to submit a representation statement in accordance with § 20-1.5404(b) from subcontractors and consultants. The contracting officer shall require the contractor to include contract clauses in accordance with § 20-1.5405 in consultant agreements or subcontracts involving performance of work under a prime contract covered by this subsection.

§ 20-1.5411 Waiver

In the first instance, determination with respect to the need to seek a waiver for specific contract awards shall be made by the contracting officer with the advice and concurrence of the program office director and the Office of Executive Legal Director. Upon the recommendation of the contracting officer, and after consultation with the Office of the General Counsel, the EDO may waive the policy in specific cases if he determines that it is in the best interest of the United States to do so.

Such action shall be strictly limited to those situations in which:


- (1) The work to be performed under contract is vital to the NRC program;
- (2) the work cannot be satisfactorily performed except by a contractor whose interests give rise to a question of conflict of interest; and
- (3) contractual and/or technical review and supervision methods can be employed by NRC to neutralize the conflict. For any such waivers, the justification and approval documents shall be placed in the Public Document Room.

920-1.5412 Remedies

In addition to such other remedies as may be permitted by law or contract for a breach of the restrictions in this subpart or for any intentional misrepresentation or intentional nondisclosure of any relevant interest required to be provided for this section, the NRC may debar the contractor from subsequent NRC contracts.

Dated at Washington, D.C. this 27th day of March 1979.

For the Nuclear Regulatory Commission



Samuel P. Chilk
Secretary of the Commission

Form NRC-489
(1-76)

**U. S. NUCLEAR REGULATORY COMMISSION
NRC MANUAL
TRANSMITTAL NOTICE**

CHAPTER NRC-3202 PUBLICATION OF TECHNICAL REPORTS PREPARED BY NRC CONTRACTORS, INCLUDING REPORTS PREPARED UNDER OR PURSUANT TO INTERAGENCY AGREEMENTS

SUPERSEDED:

	Number	Date
Chapter	<u>NRC-3202</u>	<u>4/29/82</u>
Page	<u> </u>	<u> </u>
	<u> </u>	<u> </u>
Appendix	<u>NRC-3202</u>	<u>4/29/82</u>

TRANSMITTED:

	Number	Date
TN	<u>3200-21</u>	
Chapter	<u>NRC-3202</u>	<u>8/29/84</u>
Page	<u> </u>	<u> </u>
	<u> </u>	<u> </u>
Appendix	<u>NRC-3202</u>	<u>8/29/84</u>

REMARKS:

This revision of Chapter 3202 expands the chapter from coverage of unclassified reports to include the marking and handling of sensitive unclassified information (Official Use Only and Limited Official Use Information, Safeguards Information, Proprietary Information) and classified information (Top Secret, Secret, and Confidential). A section has also been added to set forth procedures for the handling of unclassified reports on NRC cooperative programs with foreign governments and organizations and with U.S. industry.

U.S. NUCLEAR REGULATORY COMMISSION
NRC MANUAL

Volume: 3000 Information and Foreign Activities
Part : 3200 Technical Information and Document Control

ADM

CHAPTER 3202 PUBLICATION OF TECHNICAL REPORTS PREPARED BY
NRC CONTRACTORS, INCLUDING REPORTS PREPARED
UNDER OR PURSUANT TO INTERAGENCY AGREEMENTS

3202-01 COVERAGE

This chapter and its appendix handbook establish responsibilities, basic requirements, standards and procedures for the documentation, production and dissemination of technical reports prepared by NRC consultants and grantees and by NRC contractors and their subcontractors, including reports prepared under or pursuant to interagency agreements or memorandums of understanding. These reports are hereafter referred to as contractor reports. This chapter does not cover NRC staff-generated documents, NRC docket material, or the documents generated by NRC boards, panels, advisory committees and Offices that report to the Commission.

3203-02 OBJECTIVES

021 to assure production and dissemination of technical reports as required by the Energy Reorganization Act of 1974 and the Freedom of Information Act.

022 to assure that dissemination of technical reports is consistent with requirements for public availability of information.

023 to assure that national security, patent rights, copyrights, proprietary rights and rights in other sensitive unclassified information are not compromised by the release, distribution, or dissemination of technical reports from NRC.

024 to assure that formal NRC contractor reports will carry the registered NRC designation NUREG/CR or NUREG/CP as the prime identification.

025 to provide for coordination of press or other media releases.

3202-03 RESPONSIBILITIES AND AUTHORITIES

031 The Director, Office of Administration:

- a. develops and maintains, in consultation with Directors of Offices and Divisions and Regional Administrators, NRC standards, procedures and guides for the production and dissemination of technical contractor reports.

Approved: August 29, 1984

- b. periodically surveys report activities throughout NRC to ascertain that the provisions of this chapter are adequate and are being implemented; makes any changes needed.
- 032 The Director, Division of Technical Information and Document Control:
- a. develops and administers a central report control system for identifying, printing and distributing contractor reports and responding to requests for unclassified reports.
- b. develops and maintains guides and standards for the documentation, formatting, printing, dissemination, and public sale of unclassified contractor reports.
- c. assures that a system exists for review of unclassified contractor reports for adherence to patent, copyright and disclosure policies prior to dissemination.
- d. establishes and administers interagency agreements necessary for the dissemination and public sale of unclassified contractor reports and controls duplication and printing of contractor reports to assure adherence to the Government Printing and Binding Regulations issued by the Joint Committee on Printing (JCP), Congress of the United States.
- e. in response to requests of Directors of Offices and Regional Administrators, establishes distribution data banks, maintains official standard distribution lists for automatic distribution of unclassified contractor reports, and controls distribution to assure adherence to the Government Printing and Binding Regulations, the Privacy Act, and the Freedom of Information Act.
- 033 Directors of Offices and Regional Administrators:
- a. establish the contract or Standard Order for Work* provisions, including those required by this chapter and its appendix; Chapter NRC-3203, Distribution of Unclassified NRC Staff- and Contractor-Generated Documents and its appendix; Chapter NRC-0260, Printing, Copying, Graphics and Photography and its appendix; and Chapter NRC-1102, Procedures for Placement of Work with the Department of Energy. In the Statement of Work:
- (1) specify what reports will be reviewed for policy, management, and legal issues by NRC staff in draft prior to printing and distribution. If the report is to be reviewed by NRC staff, give the conditions under which the contractor may publish documents in the event of unresolvable differences relative to the draft, including the type of disclaimer to be used in addition to the standard government disclaimer (see Exhibit 6).

* In the case of DOE work, this is NRC Form 173, Standard Order for DOE Work. See Chapter NRC-1102.

- (2) provide for the reviews necessary to insure that the national security, patent rights, copyrights, proprietary rights and rights in other sensitive unclassified information are not compromised by the release or dissemination of the reports. If DOE contractors are to be authorized to make the reviews, designate the contractor officials who are authorized to sign NRC Form 426A prior to NRC distribution of reports (see Appendix, Part IV). Assure that sensitive unclassified and classified reports are marked and handled properly (see Appendix, Part V).
 - (3) specify that all formal reports carry NUREG/CR or NUREG/CP numbers as the prime identification, as illustrated in the appendix.
 - (4) specify whether formal reports shall be printed by NRC or the contractor if the contractor has a JCP-authorized federal printing plant (see Appendix, Parts II and IV).
 - (5) specify that all formal reports required by NRC shall be distributed by NRC.
 - (6) establish the number of copies the contractor may retain or request for internal and external distribution and charge against NRC. Written justification must be provided, and approval obtained of the NRC JCP representative (the Director, Division of Technical Information and Document Control) when the number exceeds the 50 copies authorized by JCP for unclassified reports.
 - (7) assure the protection of classified and sensitive unclassified information, if any, in contractor reports (see Appendix, Part V).
- b. assure adherence to instructions and authorizations regarding the reproduction and distribution of reports.
 - c. recommend standard distribution category(ies) for contractor reports to the Division of Technical Information and Document Control.
 - d. provide changes to the official standard distribution lists to the Division of Technical Information and Document Control.
 - e. establish procedures for review of contractor's proposed press and other media releases.

034 The Office of the Executive Legal Director provides legal review and advice to NRC staff on questions regarding inventions, patents, proprietary information, use of copyrighted material, national security, and other sensitive unclassified and classified information.

035 The Director, Office of Public Affairs, upon request of the project manager, reviews proposed contractor's press or other media releases for appropriateness.

036 The Director, Division of Security:

- a. administers the overall information security program which includes management of the security classification program and other programs for the protection of sensitive unclassified information.
- b. advises staff of NRC Offices and Regions on the preparation and handling of reports containing classified, proprietary and other sensitive unclassified information.

037 The Director, Division of Contracts:

- a. coordinates the flow of all reports to and from contractors (other than DOE contractors) where such reports may result in alterations in the terms and conditions of applicable contracts as they pertain to report production and distribution.
- b. advises the contractor as to the source and method for obtaining reports required from the government for performance of the contract.
- c. provides contractor with copies of NRC Chapters 0260, 3202, 3203, 3207, and 3210 when appropriate.
- d. determines when requests for proposals and invitations for bids, as well as subsequent contracts, should include statements requiring contractor compliance with Chapters NRC-3202, 3207, and 3210 and the Government Printing and Binding Regulations.
- e. ensures that appropriate clauses are included in contracts regarding the private use and protection of classified, proprietary and other sensitive unclassified information.

3202-04 DEFINITIONS*

041 camera-ready copy - pages ready for printing by the offset printing process. This is a colloquial term used even though the printing process may not involve the so-called copy camera (see also reproducible masters).

042 central report control system - means for developing and maintaining the policies, procedures and guides needed to identify and produce regulatory and technical reports and to assure adherence to requirements and standards for documentation, formatting, printing and distribution.

043 contractor report - record of work done (a report) prepared in accordance with the provisions of a contract or under or pursuant to an interagency agreement.

* Words underscored in definitions are also defined in list.

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044 copyright - a form of protection provided by the laws of the United States (Title 17, U.S. Code) to the authors of "original works of authorship" including literary, dramatic, musical, artistic, and certain other intellectual works. This protection is available to both published and unpublished works. Copyrighted material may not be reproduced without the permission of the author or publisher.

045 disseminate - to announce the publication of reports and make them available for free distribution, sale or copying.

046 distribute - to dispense reports to specific organizations and individuals to assure their participation in the regulatory process and support of research and technological investigations. Such distribution may be accomplished by the use of standard distribution data banks established and maintained by the Division of Technical Information and Document Control based on the requests of the originating Office or Region.

047 documentation - classification and associated markings required for classified or sensitive unclassified documents, the NRC report number unique to the report, title (and subtitle, if any), author or correspondent (if any), organization identification and contract number (or FIN number), date and availability.

048 draft or final material for inclusion in "Safety Evaluation Reports" or "Environmental Statements" (ES) - written material requested for input to SERs or ESs to be issued as NUREGs. Such material may be edited or modified at the discretion of the NRC staff.

049 formal technical reports - the final product of research, an original investigation, or a significant compilation of information. This product is a formal technical report for publication in the NUREG/CR series. For extensive long-term projects, formal monthly, quarterly or semiannual and annual periodic technical reports may be required. A draft of the final or periodic report may be requested for comment prior to preparation of the camera-ready copy.

0410 NRC project manager - the NRC staff member responsible for the work performed by consultants or contractors and their subcontractors, or for work performed under or pursuant to an interagency agreement.

0411 patent review - examination by legal staff to assure protection rights in inventions.

0412 proprietary information - trade secrets; privileged or confidential research, development, commercial or financial information, exempt from mandatory disclosure under 10 CFR Part 2 (Sections 2.740 and 2.790) and under 10 CFR Part 9 (Section 9.5); and other information submitted in confidence to the NRC by a foreign source and determined to be unclassified by the NRC.

0413 publicly available documents - information (reports and references) which is available in the NRC Public Document Room (PDR) for public inspection and copying or available in the public domain.

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0414 reproducible masters - camera-ready copy which includes (1) originals of line drawings (or prints that can be copied), (2) glossy prints of black and white photographs (colored photographs cannot be reproduced), (3) original typed or printed text, tables, cover, title page, contents and abstract, or (4) other forms of the materials listed in (1), (2) and (3) that a printer can reproduce.

0415 technical reports - information on the technical aspects of contract work. These may be interim or final technical letter reports, draft or final formal technical reports for publication in the NUREG/CR or NUREG/CP series, or draft or final material for inclusion in SERs or ESs.

0416 technical letter reports (also called technical evaluation reports) - interim or final letters that provide information on the technical aspects of contract work. Interim technical letter reports may be required at various stages of a project. These reports usually are followed by a final technical letter report or a formal technical report. Final technical letter reports are usually specified in situations where the technical work is review and evaluation of work of others or work to be used by the staff in the licensing and regulation process. Interim letter reports may include, but are not limited to, informal (interim) progress reports, quick-look reports, data reports, status summary reports, project descriptions, pre-tested predictions, model verifications, experiment safety analyses, experiment operating procedures, facility certification reports, and test result reports.

0417 unique identification - NRC identification used on a report and its attachments, revisions, and supplements that is not used on any other report.

3202-05 BASIC REQUIREMENTS

051 Applicability. The provisions of this chapter and its appendix apply to NRC consultants, grantees, contractors and subcontractors, including those working under interagency agreements, whose contracts require the preparation of technical reports. Because of the unique requirements of NRC boards, panels, advisory committees and Offices which report directly to the Commission, the handling of reports prepared by consultants and contractors to them are governed by the Board or Panel Chairman and, in the case of advisory committees, by the Advisory Committee Management Officer, or the Commission. These exceptions do not preclude the use of the NUREG/CR series designation on reports prepared for these entities that are to be given wide public dissemination.

052 Forms. NRC Form 426A, "Publication Release for Unclassified NRC Contractor and Consultant Reports" (Exhibit 5), NRC Form 335, "Bibliographic Data Sheet" (Exhibit 7), and NRC Form 190, "Cover Sheet for Reports Containing Proprietary Information" (Exhibit 19), shall be used as provided in the appendix.

053 Appendix 3202. This appendix contains standards and procedures for the preparation of reporting requirement portions of Statements of Work, and for the documentation, production, and dissemination of technical reports prepared by contractors and other government agencies in accordance with contract requirements or interagency agreements.

054 Preparation Requirements

- a. Reports to be Printed by NRC. All contractor reports to be printed by NRC shall be prepared according to Appendix 3202. The reproducible masters for the requisite distribution shall be transmitted to the Division of Technical Information and Document Control accompanied by completed NRC Form 426A and NRC Form 335.
- b. Reports Printed by Authorized Federal Printing Plants. All contractor reports to be printed by the contractor (as specified by the contract, agreement, or standard order for work) shall be prepared according to Appendix 3202, and a reproducible master and sufficient copies for standard and incidental distribution shall be supplied to the Division of Technical Information and Document Control, accompanied by completed NRC Form 426A, signed by the authorized contractor official. Each such report shall include, as the last page, a completed NRC Form 335.

055 References. The NRC chapters referenced and NUREG-0794 (ref. j) and NUREG-0650 (ref. i) are available from the Division of Technical Information and Document Control. The other publications are available from the Government Printing Office.

- a. Chapter NRC-0260, "Printing, Copying, Graphics and Photography."
- b. Chapter and Appendix NRC-2101, "NRC Security Program."
- c. Chapter NRC-3203, "Distribution of Unclassified NRC Staff- and Contractor-Generated Documents."
- d. Chapter NRC-1102, "Procedures for Placement of Work with the Department of Energy."
- e. Chapter NRC-3206, "NRC Contractor Speeches, Papers and Journal Articles on Regulatory and Technical Subjects."
- f. Chapter NRC-3207, "Conferences and Conference Proceedings."
- g. Title 44, U.S. Code, "Public Printing and Documents." Government Printing Office.
- h. Government Printing and Binding Regulations of the Joint Committee on Printing, Congress of the United States, No. 24, April 1977 (JCP Regulations). Government Printing Office.
- i. Title 5, U.S. Code, "Government Organization and Employees." Government Printing Office.

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- j. "Technical Writing Style Guide," A. W. Savolainen et al., compilers, U.S. NRC Report NUREG-0650, November 1979, and Supplement 1, February 1982.
- k. "Protection of Unclassified Safeguards Information," D. J. Kasun, USNRC Report NUREG-0794, October 1981
- l. Chapter NRC-0255, "Mail Management," and Appendix 0255, Part V, Annex A.

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PART I

PREPARATION OF REPORTING REQUIREMENT PORTIONS OF
STATEMENTS OF WORK FOR CONTRACTS, GRANTS AND
STANDARD ORDERS FOR DOE WORK

A LIST OF TECHNICAL REPORT REQUIREMENTS

List the technical reports required from each project, task or subtask, as applicable. State when and to whom they should be submitted and what they should contain. These reports may be unclassified, sensitive unclassified or classified. Standards for each of these categories are presented in Parts II through V. The following definitions describe the types of reports that may be specified:

technical reports - information on the technical aspects of contract work. These may be interim or final technical letter reports, draft or final formal technical reports for publication in the NUREG/CR or NUREG/CP series, or draft or final material for inclusion in SERs or ESs (see definitions below).

technical letter reports (also called technical evaluation reports) - interim or final letters that provide information on the technical aspects of the contract work. Interim technical letter reports may be required at various stages of a project. These interim letters usually are followed by a final technical letter report or a formal technical report. Final technical letter reports are usually specified in situations where the technical work is review and evaluation of work of others or work to be used by the staff in the licensing and regulation process. Interim letter reports may include, but are not limited to, informal (interim) progress reports, quick-look reports, data reports, status summary reports, project descriptions, pre-test predictions, model verifications, experiment safety analyses, experiment operating procedures, facility certification reports, and test result reports. These reports must be identified with the financial number (FIN) assigned to the project. They are not to be identified with DOE registered report codes. The number of copies to be prepared and the distribution of those copies will be specified by the project manager.

formal technical reports - the final product of research, an original investigation, or a significant compilation of information. This product is a formal technical report for publication in the NUREG/CR or NUREG/CP series. For extensive long-term projects, formal monthly, quarterly or semiannual and annual periodic technical reports may be required. A draft of the final or periodic report may be requested for comment prior to preparation of the camera-ready copy.

draft or final material for publication or inclusion in SERs, ESs, letters, or license amendments - written material requested for use in the NRC licensing process. Such material may be (1) abstracted in a NUREG report or attached to a NUREG report, (2) attached to a letter or an amendment to the license, or (3) abstracted and used as necessary by the NRC staff. NRC requires patent review and full management review of this material by the performing organization. This material is to be submitted to NRC as a technical letter report addressed to the project manager and identified by the FIN number.

For purposes of this Part, contractor means a private contractor, consultant, grantee, another State or Federal Agency working under an interagency agreement, or a DOE/facility or National Laboratory (contractor) and subcontractors.

B. REQUIREMENTS FOR FORMAL REPORTS

If the contractor is to prepare a final formal technical report for publication, state that it will be printed and distributed by NRC from camera-ready copy submitted by the contractor, unless the work is being done for the Office of Nuclear Regulatory Research by a DOE facility or Laboratory with a JCP-authorized printing plant. The camera-ready copy is to be prepared in accordance with the provisions of this appendix, Parts II and V (for contractors other than DOE contractors), or Parts IV and V of this appendix and Chapter 1102 (for DOE contractors). A style guide is also available free, upon request (NUREG-0650). If the report is to be printed by NRC and it is unclassified, the camera-ready copy is to be submitted by the contractor to the Director, Division of Technical Information and Document Control, NRC, Washington, D.C. 20555, by first class mail. For handling of sensitive unclassified and classified reports see Part V of this appendix and NRC Appendix 2101. Unclassified reports printed for the Office of Nuclear Regulatory Research should be handled in accordance with Parts IV and V of this appendix and/or Chapter 1102.

C. REQUIREMENTS FOR DRAFT REPORTS

If a draft is desired prior to completion of a final technical letter report, formal technical report, final material for inclusion in an SER or ES, or for comment by participants in cooperative programs with foreign governments and organizations and with U.S. industry, state that requirement and the time frame for delivering the final camera-ready copy after receiving NRC and/or participant comments on the draft. State that all draft material should be submitted to the cognizant project manager.

When the contractor is to submit draft material for comment prior to the preparation of the final report, state that if there are NRC program and/or participant comments the contractor will be asked to make changes. If agreement on the changes is reached, the NRC manager will authorize the contractor to prepare the final copy and submit it to the project manager, if it is a letter report or input to an SER or ES, or to the Director, Division of Technical Information and Document Control, if it is

camera-ready copy for printing and distribution. This is to be done to assure proper publication, handling, and distribution and, among other things, to preclude further changes that might nullify the agreement. If caveats were agreed to and the project manager wishes to check the final document for their presence, he/she should inform TIDC of that desire. In that case, upon receipt of the camera-ready copy by TIDC, the project manager will be informed and requested to prepare and sign the NRC Form 426A.

Also state that if agreement on changes to a formal technical report to be issued in the NUREG/CR series is not reached, the NRC project manager may request the contractor to prepare the camera-ready copy with, in addition to the standard disclaimer required on all contractor formal reports (see Exhibit 6), any caveats deemed necessary to cover NRC objections. Such caveats may range from the "The views expressed in this report are not necessarily those of the U.S. Nuclear Regulatory Commission" to the addition of a preface setting forth the NRC opinion or footnotes at appropriate locations within the text.

State that if NRC objections cannot be covered in this manner, NRC can refuse to publish the report. In the case of DOE/National Laboratory reports, the DOE Operations Office Manager responsible for that laboratory should be informed by the NRC Office Director or Regional Administrator of the decision and the reasons therefor, with a copy to the Laboratory Director. In the case of another Federal agency, a State, or a private contractor, the person who executed the contract should similarly be informed by the NRC Contracting Officer. The contractor is then free to publish without NRC identification of the report. Project manager or higher level decisions may be appealed to the NRC Executive Director for Operations.

D. PUBLISHING UNCLASSIFIED INFORMATION IN OPEN LITERATURE AND PRESENTING PAPERS

If the contractor's principal investigator is to be allowed to publish in the open literature instead of submitting a final report and/or present papers at public or association meetings during the course of the work, add the following statement to the Statement of Work:

The principal investigator(s) may publish the results of this work in the open literature instead of submitting a final report and/or present papers at public or association meetings at interim stages of the work.

If the project manager wants to review the paper or journal article prior to presentation or submission for publication, state this in the Statement of Work, as follows:

The principal investigator(s) may publish the results of this work in the open literature instead of submitting a final report and/or present papers at public or association meetings at interim stages of the work, if the article or paper has been reviewed by the NRC project

manager in draft form and agreement has been reached on the content. The applicable procedures set forth in Chapters NRC-3206 or NRC-1102 must be followed.

If agreement is not reached, NRC may also ask that the paper include in addition to the standard statement "Work supported by the U.S. Nuclear Regulatory Commission," any caveats deemed necessary to cover NRC objections. If NRC objections cannot be covered in this manner, NRC can refuse to authorize publication in the open literature and/or presentation of papers.

In the latter case, NRC will inform the contractor of the decision, as stated above for formal reports (see Section C, paragraphs 3 and 4). The contractor is then free to publish without NRC identification of the information. This will not affect payment of the contract work costs. Project manager or higher level decisions may be appealed to the NRC Executive Director for Operations.

If the contractor proposes to publish in the open literature or present the information at meetings in addition to submitting the required technical reports, approval of the proposed article or presentation should be obtained from the NRC project manager. The NRC project manager shall either approve the material as submitted, approve it subject to NRC-suggested revisions, or disapprove it. In any event, a project manager may disapprove or delay presentation or publication of papers on information that is subject to Commissioner approval that has not been ruled upon or which has been disapproved.

(See Chapter 3206 for provisions relating to payment of page charges and travel costs for presentation of papers.)

E. TYPOGRAPHY

The text of reports must be single spaced on 8½ x 11-in. paper, unless otherwise specifically authorized. Occasionally, reports with many symbols and mathematical expressions may require one and one-half spacing to provide for superscripts and subscripts. This spacing should be allowed where needed, but should be considered an exception, not the standard.

F. REPORTS CONTAINING SENSITIVE UNCLASSIFIED AND CLASSIFIED INFORMATION

Details of the marking of reports designated Official Use Only, Limited Official Use, Proprietary Information, Safeguards Information, and classified (Confidential, Secret, and Top Secret) are provided in Part V of this appendix and in NRC Appendix 2101.

G. PUBLISHING UNCLASSIFIED PROCEEDINGS OF CONFERENCES AND WORKSHOPS

NRC publishes or assists in the publication of compilations of papers presented at meetings, conferences, and symposiums in which NRC

participates as a sponsor or cosponsor. Chapter NRC-3207, "Conferences and Conference Proceedings," provides general information and guidance for this. More detailed guidance is available from TIDC upon request.

H. WRITING AND PUBLISHING UNCLASSIFIED BOOKS

NRC may, under certain circumstances, publish books prepared by grantees or contractors. For general information and guidance on book publishing, see Chapter NRC-3210, "Book Writing and Publishing."

I. DISTRIBUTION OF REPORTS TO CONTRACTORS

Up to 50 copies of unclassified formal technical reports may be retained by or will be bulk shipped to the contractor by NRC for internal use. If fewer than 50 copies are needed, indicate the desired quantity on NRC Form 426A. Single copies for specific individuals in organizations other than the contractor's organization who are not included in the distribution requested by the NRC project manager may be requested on a project basis or on a report-by-report basis. The request, with written justification, should be addressed to the NRC project manager, with a copy to NRC/TIDC. If the additional distribution is approved by the NRC project manager, the contractor shall send these copies (if printing is done by the contractor) and address labels, even if printing is done by NRC, to NRC/TIDC, where the distribution will be made along with the standard distribution. Distribution of sensitive unclassified and classified reports will be made by the project manager on a case-by-case basis.

J. COORDINATION OF PRESS OR OTHER MEDIA RELEASES OF UNCLASSIFIED INFORMATION

A contractor may request permission to issue a press or other media release on the work being done. Such request shall be made to the project manager, who will consult with his/her management and with the Office of Public Affairs. The contractor may not issue a press release on nonroutine information without this prior coordination. This coordination may be accomplished by telephone, with the NRC project manager responsible for expeditious handling. Decisions not to release information or delays in handling by the project manager may be appealed to the NRC Executive Director for Operations.

PART II

UNCLASSIFIED FORMAL CONTRACTOR REPORTS
TO BE PRINTED BY NRC

A. DOCUMENTATION

1. Applicability

- a. The requirements of this part apply to contractor and inter-agency agreement reports that are to be printed by NRC. Contractors may not print reports prepared for NRC except those DOE laboratories with JCP-authorized printing plants and then only those reports prepared for NRC's Office of Nuclear Regulatory Research.
- b. With respect to sensitive unclassified and classified reports, the requirements set forth in Part V of this appendix shall be used in conjunction with NRC Appendix 2101.
- c. The requirements of this part do not apply to consultants and contractors of the NRC boards, panels, and advisory committees which report directly to the Commission.

2. Front Cover and Title Page

- a. Separate covers and title pages are required (see Exhibits 1 and 2 for contractor reports and Exhibits 3 and 4 for reports prepared under or pursuant to interagency agreements).*
- b. The items shown in Exhibits 1 through 4 and discussed below shall appear on the title page and cover, as appropriate.**

(1) NRC Report Number

Each report shall be identified by an NRC-controlled alpha-numeric designation as the prime designation unique to that report. The centralized report control system for unique identification is maintained by the Division of Technical Information and Document Control. Numbers may be obtained by calling the Division of Technical Information and Document Control or by submitting a copy of NRC Form 426A (Exhibit 5) with a request for a number.

* Reproducible copy of the cover of the performing organization may be submitted; however, the data elements shown in Exhibit 1 must be included.

** These requirements meet the specifications of American National Standard ANSI Z39.18-1974, Guidelines for Format and Production of Scientific and Technical Reports, and ANSI Z39.23-1974, Technical Report Numbers.

PUBLICATION OF TECHNICAL REPORTS PREPARED BY
NRC CONTRACTORS, INCLUDING REPORTS PREPARED
UNDER OR PURSUANT TO INTERAGENCY AGREEMENTS

The NRC identification number will have the form:

NUREG/CR-XXXX or NUREG/CP-XXXX

where CP indicates conference proceeding. The contractor's report number, if any, may be inserted below the NUREG number on the title page and cover, as shown in Exhibits 1 through 4, if desired by the contractor.

When a report consists of more than one volume or binding or is issued in more than one edition, an appropriate volume, supplement, part or revision designation shall appear immediately below the report number.

(2) Title and Subtitle

- (a) Use a brief title that indicates clearly the subject matter covered in the report.
- (b) When a report is prepared in more than one volume, repeat the primary title on each volume.
- (c) If appropriate, show the type of report (e.g., annual report, final report, thesis, etc.) and the period covered as part of the subtitle.

(3) Personal Author(s)' Name(s)

Authors' names should be given on the title page and cover unless this is impractical, as in the case of annual reports which have many contributors. If authors' contributions are as editors, compilers, etc., so indicate on the title page following the names. In addition, list affiliation of each author only if affiliated with an organization other than the organization generating the document.

(4) Organization Identification

On the title page and cover, provide information of the type illustrated in Exhibits 1 through 4.

(5) Basis for Report Date(s)

- (a) The basis for dating may be shown along with the date on the title page. Various bases for dating are possible; e.g., date report completed, date reviews completed, date published, date distributed, etc.
- (b) More than one date, with the basis for each, may be shown where this is necessary.

3. Availability Information

All formal reports will be made available for sale by NRC and by the National Technical Information Service (NTIS). Exhibit 6 will be inserted on the inside of the front cover by the Division of Technical Information and Document Control.

4. Disclaimer

The following notice will be added during the printing step on the inside front cover (Exhibit 6): "This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, or any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product or process disclosed in this report, or represents that its use by such third party would not infringe privately owned rights." The following additional statement, "The views expressed in this report are not necessarily those of the U.S. Nuclear Regulatory Commission" will be printed below the standard disclaimer, if appropriate. Other qualifying statements may be added, if needed (see Part I.C., Requirements for Draft Reports).

5. Previous Reports in Series

If the report being prepared is one in an ongoing series, list all previous reports in the series. Include report numbers and issuance dates. Place this list on the back of the title page.

6. Abstract

An abstract of 200 words or less shall be prepared for each formal report. Within the report, the abstract shall appear on a separate page between the list of previous documents in the series and the contents page.*

7. References and Bibliographies

Reports or other documents referenced in text, reference sections, bibliographies, and appendixes of unclassified regulatory and technical reports in the NUREG series must be available to the public either in the public domain (as in a public library, at the Government Printing Office, at the National Technical Information Service, or at other reference or sales outlets) or in the NRC Public Document Room. This means that references should not be made to personal communications and interviews, unpublished

*This preferred positioning of the abstract in the report need not be followed if the style manual of the originating organization requires a different location.

information and information with restricted distribution (e.g., proprietary, national security, official use only, etc.). If the unretrievable information is important and unrestricted, it can be quoted in the text, in footnotes, or in appendixes. If credit is due to individuals, they can be mentioned in the text or in an acknowledgement section. Availability may be stated collectively for all entries (see Exhibit 6).

Guidelines for developing and presenting reference material are provided in NUREG-0650, "Technical Writing Style Guide," published in November 1979 (see Appendix A, pp. 19-23, for specific guidance) and Supplement 1 dated February 1982.

8. Bibliographic Data Sheet

NRC Form 335 (Exhibit 7) shall be prepared and included in the camera-ready copy as the final right-hand page.

B. PATENT AND SECURITY REVIEWS

1. Patent Review

Patent implications shall be considered prior to approval of reports for public release so that disclosure will not adversely affect the patent rights of NRC or the contractor. If the work being reported is contractually managed through another government agency (e.g., DOE laboratories), that government agency should be requested by the contractor to perform the patent review. The result of such review shall be reported on NRC Form 426A in item 11 (Exhibit 5).

If NRC directly administers the contract or the contractor is unable to obtain a patent clearance from the government agency administering the contract, the responsible NRC contracting officer shall be consulted, and the responsible NRC project manager shall consider the patent implications. If there is no need for patent review because of the certainty that the report contains no description of novel technical developments which may be of an inventive nature, NRC Form 426A may be completed with the statement "Not Applicable" or "N/A" in the space for the Patent Counsel's signature. If there is a possibility that there is disclosure of developments of an inventive nature, the contracting officer shall request assistance from the NRC Patent Counsel, Office of the Executive Legal Director.

2. Security Review

In most cases, contractor reports will be unclassified. Should a report of sensitive unclassified or classified work be required, however, the NRC project manager must work with the NRC Division of Security to establish the appropriate procedures and inform the contractor of such procedures through the contracting officer. The standards for marking and handling such reports are given in Part V of this appendix and NRC Appendix 2101.

C. PROCEDURES FOR PRINTING AND DISTRIBUTING

1. Printing

Reproducible masters prepared in accordance with this appendix shall be transmitted to the Division of Technical Information and Document Control, accompanied by completed NRC Form 426A (Exhibit 5). NRC Form 426A must be signed by the NRC project manager or a contractor official authorized by the project manager. Such authorization shall be reported in writing to TIDC.

The Division of Technical Information and Document Control will review the masters for adherence to the standards set forth in this chapter and appendix and will arrange for printing and distributing the report. Unsatisfactory masters will be reported to the NRC project manager for appropriate contractual action by the contracting officer or, in the case of government agency or interagency agreement work, the publications manager of the performing organization.

2. Reprinting

Requests for reprinting any report subsequent to the initial printing require approval of the Division of Technical Information and Document Control. Each request shall include a written justification and the project manager's approval for reprinting along with address labels for the recipients.

3. Distribution of Reports

All copies of unclassified formal contractor reports will be distributed by the Division of Technical Information and Document Control in accordance with instructions on NRC Form 426A (Exhibit 5). The Division of Technical Information and Document Control will also arrange automatic distribution of these reports to the NRC Document Control System, the NRC Public Document Room, the National Technical Information Service (NTIS), the Government Printing Office and the Depository Library Service.

If any distribution is to be made other than, or in addition to, the standard distribution established for the report, written justification and the project manager's approval for printing additional copies shall accompany the reproducible masters when submitted to the Division of Technical Information and Document Control. Address labels for the additional distribution must be supplied.

Distribution of sensitive unclassified and classified reports will be made by the NRC project manager on a case-by-case basis.

EXHIBIT 1

SAMPLE COVER FOR UNCLASSIFIED FORMAL CONTRACTOR-PREPARED
DOCUMENTS, EXCLUDING THOSE PREPARED UNDER OR PURSUANT TO
INTERAGENCY AGREEMENTS

NRC Report No.
Contractor Report No. (if any)
Vol., Part, Rev., etc. (if any)

NUREG/CR-1676
NUSAC-556
Vol. 1

Title

Using Advanced Process Monitoring
to Improve Material Control

Subtitle and Type of Report
(Annual, Topical, etc.)

Final Report
September 1979 - September 1980

Author(s)

Prepared by R. L. Hawkins, R. L. Lynch, R. F. Lumb

Contractor

NUSAC Incorporated

NRC

Prepared for
U.S. Nuclear Regulatory
Commission

EXHIBIT 2

SAMPLE TITLE PAGE FOR UNCLASSIFIED FORMAL CONTRACTOR-
PREPARED DOCUMENTS, EXCLUDING THOSE PREPARED UNDER OR
PURSUANT TO INTERAGENCY AGREEMENTS

NRC REPORT No.
Contractor Report No. (if any)
Vol., Part, Rev., etc. (if any)
Distribution Category No. (if any)

NUREG/CR 1676
NUSAC-566
Vol. 1

Title

Using Advanced Process Monitoring
to Improve Material Control

Subtitle and Type of Report
(Annual, Topical, etc.)

Final Report
September 1979 - September 1980

Report Dates and Bases

Manuscript Completed: September 1980
Date Published: September 1980

Author(s), Editor(s),
Compiler(s), etc.

Prepared by
R. L. Hawkins, R. L. Lynch, R. F. Lumb

Contractor Name
and Address

NUSAC Incorporated
7926 Jones Branch Drive
McLean, VA 22102

NRC Sponsorship

Prepared for
Division of Safeguards
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555
NRC FIN B6437

NRC Contract No.

EXHIBIT 3

SAMPLE COVER FOR UNCLASSIFIED FORMAL REPORTS PREPARED
UNDER OR PURSUANT TO INTERAGENCY AGREEMENTS

NRC Report No.
Contractor Report No.
Vol., Part, Rev., etc.

NUREG/CR-1952
SAND81-0151

Title

LOCA-Simulation Thermal-Shock Test of Sliding-Link Terminal Blocks

Type of Report
or Subtitle

Independent Verification Testing Program
Independent Verification Test-1

Author(s), Editor(s)

Prepared by L. L. Borzon, W. H. Buckalew, F. V. Thome, J. A. Lewin, T. W. Gilmore, SNL
W. R. Rutherford, A. B. Bennett, NRC

Contractor

Sandia National Laboratories

Sponsorship

Prepared for
U. S. Nuclear Regulatory
Commission

EXHIBIT 4

SAMPLE TITLE PAGE FOR UNCLASSIFIED FORMAL REPORTS PREPARED
UNDER OR PURSUANT TO INTERAGENCY AGREEMENTS

NRC Report No.
Contractor's Report No.
Vol., Part, Rev., etc.
Distribution
Category

NUREG CR 1982
SAND81-0151
R4

Title

LOCA-Simulation Thermal-Shock
Test of Sliding-Link Terminal
Blocks

Subtitle

Independent Verification Testing Program
Independent Verification Test 1

Report Dates

Manuscript Completed: January 1981
Date Published: May 1981

Author(s), Editor(s)

Prepared by:
C. L. Bonzon, W. H. Bucklew, F. V. Thome, J. A. Lewis, T. W. Gensie, S.N.L.,
W. R. Rutherford, & E. Bennett, NRC

Contractor's
Name and Address

Sandia National Laboratories
Albuquerque, NM 87185

NRC Sponsorship

Prepared for:
Division of Resident and Regional Reactor Inspection
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20556
NRC FIN 83101

NRC FIN No.

PUBLICATION OF TECHNICAL REPORTS PREPARED BY
 NRC CONTRACTORS, INCLUDING REPORTS PREPARED
 UNDER OR PURSUANT TO INTERAGENCY AGREEMENTS

NRC Appendix 3202
 Part II

EXHIBIT 5
 NRC FORM 426A, PUBLICATIONS RELEASE FOR UNCLASSIFIED
 NRC CONTRACTOR AND CONSULTANT REPORTS

NRC FORM 426A 12-78 NRCM 3201		U.S. NUCLEAR REGULATORY COMMISSION		1. REPORT NUMBER (if any)	(Check if release from Division of Technical Information and Document Center)
PUBLICATIONS RELEASE FOR UNCLASSIFIED NRC CONTRACTOR AND CONSULTANT REPORTS (Repeat Type or Print)				2. DISTRIBUTION CATEGORY (if any)	(Check appropriate number from the NRC Distribution System List and SOLID C 0850)
3. TITLE AND SUBTITLE (State if to be shown on document)					
4. AUTHORS (If more than three, name first author followed by "et al.")					
5. NAME OF CONTRACTOR		MAILING ADDRESS (Number and Street, City, State and Zip Code)		TELEPHONE NO.	
6. DATE MANUSCRIPT COMPLETED	NRC PROGRAM SPONSOR TECHNICAL MONITOR			TELEPHONE NO.	
8. CONTRACT DATA					
a. CONTRACT OR FIN NUMBER (Or number DOE contract number)					
b. IF CONTRACTOR IS AUTHORIZED TO PRINT, PLEASE PROVIDE THE FOLLOWING INFORMATION:					
NUMBER OF COPIES PRINTED		ESTIMATED COMPOSITION COST		ESTIMATED PRINTING COST	
9. TYPE OF DOCUMENT (Check appropriate box)					
a. TECHNICAL REPORT					
1. FORMAL					
2. INTERIM					
b. CONFERENCE PAPER					
1. TITLE OF CONFERENCE PAPER					
2. DATE(S) OF CONFERENCE					
3. LOCATION OF CONFERENCE					
c. OTHER (Indicate type of item, e.g. Small speech soundings which guide etc.)					
10. SPECIAL DISTRIBUTION: Same as copies to the Distribution Services Branch, Division of Technical Information and Document Center. See NRC Form 426A Instructions for Part 4. Make available only as specifically approved by program office. If sent to other addresses, such as addresses for the public, include distribution. Continue instructions on reverse of separate sheet, if needed.					
11. PATENT CLEARANCE (If applicable)			12. SUBMITTED BY		
Forward completed signed NRC Form 426A together with the original document to: (Check one) TO: Appropriate Patent Counsel			a. NAME OF AUTHORIZED CONTRACTOR OFFICIAL OR NRC MONITOR (Type or Print)		
b. PATENT CLEARANCE NOT REQUIRED			c. OFFICIAL'S ORGANIZATIONAL UNIT		
d. PATENT CLEARANCE GRANTED					
e. PATENT CLEARANCE DENIED					
f. PATENT COUNSEL SIGNATURE		DATE	SIGNATURE (Also see instructions on reverse of this form)		DATE

**EXHIBIT 6
DISCLAIMER AND AVAILABILITY STATEMENTS
(BACK OF COVER)**

NOTICE

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, or any of their employees, makes any warranty, expressed or implied, or assumes any legal liability of responsibility for any third party's use, or the results of such use, of any information, apparatus, product or process disclosed in this report, or represents that its use by such third party would not infringe privately owned rights.

NOTICE

Availability of Reference Materials Cited in NRC Publications

Most documents cited in NRC publications will be available from one of the following sources:

1. The NRC Public Document Room, 1717 H Street, N.W.
Washington, DC 20555
2. The NRC/GPO Sales Program, U.S. Nuclear Regulatory Commission,
Washington, DC 20555
3. The National Technical Information Service, Springfield, VA 22161

Although the listing that follows represents the majority of documents cited in NRC publications, it is not intended to be exhaustive.

Referenced documents available for inspection and copying for a fee from the NRC Public Document Room include NRC correspondence and internal NRC memoranda, NRC Office of Inspection and Enforcement bulletins, circulars, information notices, inspection and investigation notices, License Event Reports, vendor reports and correspondence, Commission papers, and applicant and license documents and correspondence.

The following documents in the NUREG series are available for purchase from the NRC/GPO Sales Program: formal NRC staff and contractor reports, NRC-sponsored conference proceedings, and NRC booklets and brochures. Also available are Regulatory Guides, NRC regulations in the *Code of Federal Regulations*, and *Nuclear Regulatory Commission Issuances*.

Documents available from the National Technical Information Service include NUREG series reports and technical reports prepared by other federal agencies and reports prepared by the Atomic Energy Commission, forerunner agency to the Nuclear Regulatory Commission.

Documents available from public and special technical libraries include all open literature items, such as books, journal and periodical articles, and transactions. *Federal Register* notices, federal and state legislation, and congressional reports can usually be obtained from these libraries.

Documents such as theses, dissertations, foreign reports and translations, and non-NRC conference proceedings are available for purchase from the organization sponsoring the publication cited.

Single copies of NRC draft reports are available free, to the extent of supply, upon written request to the Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Copies of industry codes and standards used in a substantive manner in the NRC regulatory process are maintained at the NRC Library, 7920 Norfolk Avenue, Bethesda, Maryland, and are available there for reference use by the public. Codes and standards are usually copyrighted and may be purchased from the originating organization or, if they are American National Standards, from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

GPO Printed copy price _____

EXHIBIT 7
 NRC FORM 335 - BIBLIOGRAPHIC DATA SHEET

1. TITLE AND SUBTITLE 2. AUTHOR(S) 3. PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code) 4. SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)		5. REPORT NUMBER (Assigned by FPOC and FOI file # only) 6. DATE REPORT COMPLETED MONTH: _____ YEAR: _____ 7. DATE REPORT ISSUED MONTH: _____ YEAR: _____ 8. PROJECT/TASK REPORT NUMBER 9. FUNDING NUMBER	
10. SUPPLEMENTARY NOTES 11. ABSTRACT (200 words or less)		12. TYPE OF REPORT 13. PERIOD COVERED (Month/Year/Date)	
14. DOCUMENT ANALYSIS -- KEYWORDS/DESCRIPTORS 15. IDENTIFIERS/OPEN ENDED TERMS		16. AVAILABILITY STATEMENT 17. SECURITY CLASSIFICATION (The report) (The report) 18. NUMBER OF PAGES 19. PRICE	

**EXHIBIT 7 (Continued)
BACK OF NRC FORM 335**

DO NOT PRINT THESE INSTRUCTIONS AS A PAGE IN THE NUREG REPORT

INSTRUCTIONS

NRC FORM 335, BIBLIOGRAPHIC DATA SHEET, IS BASED ON GUIDELINES FOR FORMAT AND PRODUCTION OF SCIENTIFIC AND TECHNICAL REPORTS, ANSI Z39.18-1974 AVAILABLE FROM AMERICAN NATIONAL STANDARDS INSTITUTE, 1430 BROADWAY, NEW YORK, NY 10018. EACH SEPARATELY BOUND REPORT - FOR EXAMPLE, EACH VOLUME IN A MULTIVOLUME SET - SHALL HAVE ITS UNIQUE BIBLIOGRAPHIC DATA SHEET.

1. **REPORT NUMBER.** Each individually bound report shall carry a unique alphanumeric designation (NUREG) assigned by the Division of Technical Information and Document Control, ADM, in accordance with American National Standard ANSI Z39.23-1974, Technical Report Number (STRN). Use uppercase letters, Arabic numerals, slashes, and hyphens only, as in the following examples: NUREG-0100, NUREG/CP-0010, NUREG/OR-0100, and NUREG/BR-0010. For reports in a series add Vol., Supp., Revision and Addendum, when necessary. Add contractor cross-reference identification number (if any) below NUREG number, e.g., PNL-XXXX, SANDXX XXXX, SA1-XXXX.
2. **TITLE AND SUBTITLE.** Title should indicate clearly and briefly the subject (coverage) of the report, including any subtitle to the main title. When a report is prepared in more than one volume, repeat the primary title, add volume number and include subtitle for the specific volume. Use upper and lower case letters, but capitalize computer code names. Do not use acronyms and initialisms in titles, may be added in parenthesis.
3. **LEAVE BLANK.**
4. **DATE REPORT COMPLETED.** Each report shall carry a date indicating month and year project/task completed.
5. **AUTHOR(S).** Give name(s) in conventional order (e.g., John R. Doe, J. Robert Doe). List author's affiliation if it is different from the performing organization.
6. **DATE REPORT ISSUED.** Each report shall carry a date indicating month and year published.
7. **PERFORMING ORGANIZATION NAME AND MAILING ADDRESS.** Give name, street, city, state, and ZIP code. List no more than two levels of an organizational hierarchy. Display the name of the organization exactly as follows: Division, Office, Organization or Government agency, and address.
8. **PROJECT/TASK/WORK UNIT NUMBER.** Use the project, task and work unit numbers under which the report was prepared (if any).
9. **FIN OR GRANT NUMBER.** Insert the FIN or grant number under which report was prepared.
10. **SPONSORING ORGANIZATION.** List NRC Division, Office, U.S. Nuclear Regulatory Commission, Washington, DC 20555.
11. a. **TYPE OF REPORT.** State draft, final, preliminary, topical, technical, regulatory, quarterly, etc., and, if applicable, inclusive dates.
b. **PERIOD COVERED.**
12. **SUPPLEMENTARY NOTES.** Enter information not included elsewhere but useful, such as: Prepared in cooperation with _____ Presented at conference of _____ To be published _____ Docket No. _____ When a report is revised, indicate whether the new report supersedes or supplements the older report.
13. **ABSTRACT.** Include a brief (200 words or less) factual summary of the most significant information contained in the report. If the report contains a significant bibliography or literature survey or multiple volumes, mention it here. Abstract is to be prepared by author or project manager.
14. **DOCUMENT ANALYSIS**
 - a. **KEY WORDS/DESCRIPTORS.** Select from the Energy Data Base Subject Thesaurus, DOE/TIC-700R R.S., the proper authorized terms that identify the major concept of the research and are sufficiently specific and precise to be used as index entries for cataloging.
 - b. **IDENTIFIERS AND OPEN-ENDED TERMS.** Use identifiers for project names, code names, equipment designators, etc. Use open-ended (keywords) terms written in descriptor form (14a) for those subjects for which no descriptor exists in the thesaurus.
15. **AVAILABILITY STATEMENT.** Denote public releasability, for example "unlimited", or limitation for reasons other than security.
16. **SECURITY CLASSIFICATION.** Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., unclassified).
17. **NUMBER OF PAGES.** Leave blank. (Added by NTIS)
18. **PRICE.** Leave blank. (Added by NTIS)

PART III

UNCLASSIFIED TECHNICAL LETTER REPORTS

A. FORMAT

1. Applicability

- a. The requirements of this part apply to unclassified contractor technical letter reports. (See Part I.A for definition.)
- b. The requirements of this part do not apply to consultants and contractors to the NRC boards, panels, and advisory committees which report directly to the Commission.

2. Requirements

Technical letter reports are prepared, duplicated and distributed in accordance with the requirements of the Statement of Work in the contract or in the Standard Order for DOE Work. Each such report must be identified with the financial number (FIN) assigned to the project. The number of copies to be prepared and the distribution of those copies will be specified by the project manager. If unclassified and non-sensitive, the NRC project manager is responsible for making such reports available in the NRC Public Document Room (PDR) by sending them to the PDR through the NRC Document Control System.

B. PATENT AND SECURITY REVIEWS

1. Patent Review

Patent implications shall be considered prior to approval of reports for public release so that disclosure will not adversely affect the patent rights of NRC. If the work being reported is contractually managed through another government agency (e.g., DOE laboratories), that government agency should be requested by the contractor to perform the patent review.

If NRC directly administers the contract or the contractor is unable to obtain a patent clearance from the government agency administering the contract, the responsible NRC contracting officer shall be consulted, and the responsible NRC project manager shall consider the patent implications.

If there is a possibility that there is disclosure of developments of an inventive nature, the NRC contracting officer shall request assistance from the NRC Patent Counsel, Office of the Executive Legal Director.

2. Security Review

In most cases, contractor technical letter reports will be unclassified. Should a report of sensitive unclassified or classified work be required, however, the project manager must work with the Division of Security to establish the appropriate security procedures and inform the contractor of such procedures. The standards for marking and handling such reports are given in Part V of this appendix and NRC Appendix 2101.

PART IV

UNCLASSIFIED FORMAL REPORTS TO BE PRINTED FOR THE NRC
OFFICE OF NUCLEAR REGULATORY RESEARCH BY DOE
LABORATORIES WITH JCP-AUTHORIZED FEDERAL PRINTING PLANTS

A. DOCUMENTATION

1. Applicability

- a. The requirements of this part apply to NRC staff who are responsible for agreements with DOE Laboratories and their contractors who print regulatory and technical reports required by NRC. (See also Chapter NRC-1102).
- b. With respect to sensitive unclassified and classified reports the requirements set forth in Part V of this appendix shall be used in conjunction with NRC Appendix 2101.
- c. The requirements of this part do not apply to consultants and contractors to the NRC boards, panels and advisory committees which report directly to the Commission.

2. Front Cover and Title Page

- a. Separate covers (of different paper than that of the text) and title page are required.*
- b. Items such as those shown in Exhibits 3 and 4 and discussed below shall appear on the front cover and title page, as appropriate.** While layouts and typefaces need not be exactly the same as in Exhibits 3 and 4, the items shall appear in approximately the locations indicated and with the same relative prominence.

(1) NRC Report Number

Each report shall be identified by an NRC-controlled alpha-numeric designation as the prime designation unique to that document. The centralized report control system for unique identification is maintained by the Division of Technical Information and Document Control. Numbers may

* The cover stock of the performing organization may be used; however it must include the data elements shown in Exhibit 3.

** These requirements meet the specifications of American National Standard ANSI Z39.18-1974, "Guidelines for Format and Production of Scientific and Technical Reports," and ANSI Z39.23-1974, "Technical Report Numbers."

be obtained by calling the Division of Technical Information and Document Control or by submitting a copy of NRC Form 426A (Exhibit 5) with a request for a number.

The NRC identification number will have the form:

NUREG/CR-XXXX or NUREG/CP-XXXX

The contractor's report number, if any, will be inserted below the NUREG number on the title page and cover, as shown in Exhibits 3 and 4, if desired by the contractor.

When a report consists of more than one volume or binding or is issued in more than one edition, an appropriate volume, supplement, part, or revision designation shall appear immediately below the report number(s). NRC report numbers on covers and title pages shall be shown entirely on one line to facilitate computer processing.

(2) Title and Subtitle

- (a) Use a brief title, which indicates clearly the subject matter covered in the report.
- (b) When a report is prepared in more than one volume, repeat the primary title on each volume.
- (c) If appropriate, show the type of report (e.g., annual report, final report, etc.) and the period covered as part of the subtitle.

(3) Personal Author(s)' Name(s)

- (a) Authors' names should be given on the title page and cover unless this is impractical, as in the case of annual reports which have many contributors. If authors' contributions are as editors, compilers, etc., so indicate on title page and cover following the names. In addition, list affiliation of each author only if affiliated with an organization other than the organization generating the report.
- (b) Authors may be identified on backstrips (spines) of bound volumes.

(4) Organization Identification

- (a) On the cover, provide the name of the contractor responsible for preparing the report, followed by "Prepared for the U.S. Nuclear Regulatory Commission."

(b) On the title page, provide information of the type illustrated in Exhibit 4.

(5) Basis for Report Dates(a)

(a) The basis for dating may be shown along with the date on the title page. Various bases for dating are possible; e.g., date report completed, date reviews completed, date published, date distributed, etc.

(b) More than one date, with the basis for each, may be shown where this is necessary.

3. Availability and Price Information

All formal reports will be made available for sale by NRC and NTIS. The statement shown in Exhibit 6 is required on the inside of the front cover.

4. Disclaimer

The following notice shall be added during the printing step on the inside front cover (Exhibit 6): "This report was prepared as an account of work sponsored by the United States Government. Neither the United States Government nor any agency thereof, or any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product or process disclosed, or represents that its use by such third party would not infringe privately owned rights." The following additional statement, "The views expressed in this report are not necessarily those of the U.S. Nuclear Regulatory Commission" will be printed below the standard disclaimer, if appropriate. Other qualifying statements may be added, if needed (see Part I.C., Requirements for Draft reports).

5. Previous Reports in Series

If the report being prepared is one in an ongoing series, list all previous reports in the series. Include report numbers and issuance dates. Place this list on the back of the title page.

6. Abstract

An abstract of 200 words or less shall be prepared for each formal report. Within the report, the abstract shall appear on a separate page between the list of previous documents in the series and the contents page.*

*This preferred positioning of the abstract in the document need not be followed if the style manual of the originating organization requires a different location.

7. References and Bibliographies

Reports or other documents referenced in text, reference sections, bibliographies, and appendixes of unclassified regulatory and technical reports in the NUREG series must be available to the public either in the public domain (as in a public library, at the Government Printing Office, at the National Technical Information Service, or at other reference or sales outlets) or in the NRC Public Document Room. This means that references should not be made to personal communications and interviews, unpublished information and information with restricted distribution (e.g., proprietary, national security, official use only, etc.). If the unretrievable information is important and unrestricted, it can be quoted in the text, in footnotes, or in appendixes. If credit is due to individuals, they can be mentioned in the text or in an acknowledgement section. Availability may be stated collectively for all entries (see Exhibit 6).

Guidelines for developing and presenting reference material are provided in NUREG-0650, "Technical Writing Style Guide," published in November 1979 (see Appendix A, pp. 19-23, for specific guidance) and Supplement 1 dated February 1982.

8. Bibliographic Data Sheet

NRC Form 335 (Exhibit 7) shall be prepared and included in the camera-ready copy as the final right-hand page.

B. PATENT AND SECURITY REVIEWS

1. Patent Review

Patent implications shall be considered prior to approval of reports for public release so that disclosure will not adversely affect the patent rights of NRC or the contractor. The DOE Operations Office responsible for the contractor should perform the patent review. The results of such review shall be reported by the contractor on NRC Form 426A in item 11 (Exhibit 5).

2. Security Review

In most cases, reports will be unclassified. Should a report of sensitive unclassified or classified work be required, however, the NRC project manager must work with the Division of Security to establish the appropriate classification procedures and inform the contractor. The standards for marking and handling such reports are given in Part V of this appendix and NRC Appendix 2101.

C. PROCEDURES FOR PRINTING AND DISTRIBUTING

1. Printing

Contractor reports may be printed only by a JCP-authorized printing plant and then only if prepared for the NRC Office of Nuclear Regulatory Research. Reports printed by the contractor and one reproducible master shall be submitted to the Division of Technical Information and Document Control, with completed NRC Form 426A. The number of copies specified by the Statement of Work for standard and incidental distribution shall be provided. The appropriate identifying number (NUREG/CR-__) may be obtained as discussed in Section A.2.b.(1).

2. Reprinting

Requests for reprinting of any report at NRC expense subsequent to the initial printing requires approval of the Division of Technical Information and Document Control. The request shall include a written justification and the project managers approval for the reprinting, along with address labels for the recipients.

3. Distribution of Reports

All copies of unclassified formal contractor reports will be distributed by the Division of Technical Information and Document Control in accordance with instructions on NRC Form 426A (Exhibit 5). NRC Form 426A must be signed by a contractor official authorized by the project manager. Such authorization shall be reported in writing to the Division of Technical Information and Document Control.

If any distribution is to be made other than, or in addition to, the standard distribution established for the report, written justification and the project manager's approval for printing additional copies shall accompany the reproducible masters when submitted to the Division of Technical Information and Document Control. Address labels for the additional distribution must be supplied.

The Division of Technical Information and Document Control will arrange automatic distribution of these reports to the NRC Document Control System, the NRC Public Document Room, the National Technical Information Service (NTIS), the Government Printing Office and the Depository Library Service.

Distribution of sensitive (unclassified) and classified reports will be made by the NRC project manager on a case-by-case basis.

PART V

REPORTS CONTAINING SENSITIVE UNCLASSIFIED
AND CLASSIFIED INFORMATION

A. APPLICABILITY

These procedures and exhibits of this part apply to sensitive unclassified and classified reports prepared by NRC contractors. These reports include those designated:

Official Use Only
Limited Official Use
Proprietary Information
Safeguards Information
Confidential
Secret
Top Secret

Only sufficient information is presented here to aid in the preparation of the properly marked covers, title pages, back covers, and text pages. Details of the NRC Security Program and specific provisions for determining when to use the markings exhibited are contained in NRC Appendix 2101.

The reports covered are defined as sensitive unclassified or classified. Sensitive unclassified information refers to information designated Official Use Only, Limited Official Use, and Proprietary Information. Sensitive unclassified information also includes Safeguards Information that must be protected from unauthorized disclosure pursuant to 10 CFR 73.21 and Section 147 of the Atomic Energy Act of 1954, as amended, information withheld from public dissemination under the Freedom of Information Act or Privacy Act, and information not to be exported to or disclosed to foreign countries.

Classified information as used in this part includes Restricted Data, Formerly Restricted Data or National Security Information that requires protection in one of the three classification categories described in Executive Order 12356: Top Secret, Secret or Confidential.

The uses of each of the sensitive unclassified and classified categories and the markings required on reports are discussed and exhibited in the following sections. All sensitive unclassified and classified reports are to be sent directly to the project manager.

B. OFFICIAL USE ONLY AND LIMITED OFFICIAL USE INFORMATION.

NRC regulations require an Official Use Only marking to be placed on a report only when the originator or other holder believes the marking is

essential to ensure proper handling. Reports designated Official Use Only will contain only unclassified information originated by or furnished to an NRC contractor which is to be withheld from public disclosure. The report on which the marking appears must be reviewed at the time a request for release is received to determine its releasability. The Official Use Only marking is notice of the originator's determination of the applicability of an exemption under the Freedom of Information Act or Privacy Act or both at the time of origination.

Official Use Only NRC contractor reports shall be marked as shown in Exhibits 8 through 10.

Limited Official Use information is information originated by the U.S. Department of State. A report originated by an NRC contractor that contains Limited Official Use information shall be marked as shown in Exhibits 11 through 13.

Procedures for reproducing, transmitting, protecting, and handling reports containing Official Use Only and Limited Official Use information and removing such reports from those categories are detailed in NRC Appendix 2101.

C. PROPRIETARY INFORMATION

Proprietary information is a specific type of Official Use Only information. Proprietary information includes:

1. trade secrets.
2. privileged or confidential research, development, commercial or financial information exempt from mandatory disclosure under 10 CFR Part 2, "Rules of Practice for Domestic Licensing Proceedings," Sections 2.740 and 2.790 and under 10 CFR Part 9, "Public Records," Section 9.5, "Exemptions."
3. information submitted in confidence to NRC by a foreign source, which has been determined by NRC to be unclassified.

Unclassified NRC contractor reports containing proprietary information shall be marked as shown in Exhibits 14 through 18. In each instance, the optional wording that describes the material being presented should be selected.

If a report contains both Official Use Only information and proprietary information, the front cover shall be marked as proprietary information and may also be marked as Official Use Only information, if necessary. Pages in the report that contain proprietary information may be marked accordingly, including, marginal or other indicators of the specific wording that is proprietary. Similarly, the pages that contain Official Use Only information without proprietary information may be marked Official Use Only.

Procedures for reproducing, transmitting, protecting and handling proprietary information reports and removing them from the proprietary information category are detailed in NRC Appendix 2101. A cover sheet (Exhibit 19) is to be placed on each hard copy of a report containing proprietary information.

D. SAFEGUARDS INFORMATION

Safeguards information may be of three types: (1) classified information, which is marked and handled as indicated in Section E, (2) unclassified information restricted under Section 147 of the Atomic Energy Act, which is marked and handled as described in this Section, and (3) unclassified information, which is publicly available and handled as indicated in Parts I through IV.

The safeguards information that is to be protected as described here is unclassified information used in a report which specifically identifies certain licensee's or applicant's detailed:

1. security measures for the physical protection of special nuclear material
2. security measures for the physical protection and location of certain plant equipment vital to the safety of production or utilization facilities.

Unclassified NRC contractor reports containing safeguards information that is to be protected shall be marked as shown in Exhibits 20 through 22.

Procedures for reproducing, transmitting, protecting, and handling safeguards information reports and removing them from the safeguards information category are detailed in NRC Appendix 2101. A cover sheet (Exhibit 23) is to be placed on each hard copy of a report containing safeguards information.

E. CLASSIFIED INFORMATION

Classified information is limited to Restricted Data, Formerly Restricted Data and National Security Information. The procedures for making classification determinations and for marking, reproducing, transmitting, protecting, and handling reports containing classified information and removing such reports from classified categories are detailed in NRC Appendix 2101. These procedures are too complex for summarizing here.

Classification determinations regarding NRC information may be made solely by authorized classifiers designated by NRC or DOE. Authorized classifiers are responsible for insuring that reports they determine to be classified are marked and protected in accordance with the provisions of NRC Appendix 2101.

It is important to note that information may not be classified in order to prevent or delay the release of information that does not require protection in the interest of national security. Basic scientific research information not clearly related to national security may not be classified.

EXHIBIT B
SAMPLE COVER FOR A CONTRACTOR REPORT CONTAINING
OFFICIAL USE ONLY INFORMATION

OFFICIAL USE ONLY

NUREG/CR-XXXX (S)

Title
Subtitle and Type of Report

Author(s), Editor(s)
Contractor
Prepared for
U.S. Nuclear Regulatory Commission

WITHHOLD FROM PUBLIC DISCLOSURE

OFFICIAL USE ONLY

EXHIBIT 9
SAMPLE TITLE PAGE FOR A CONTRACTOR REPORT CONTAINING
OFFICIAL USE ONLY INFORMATION

OFFICIAL USE ONLY

NUREG/CR-XXXX (S)

Title

Subtitle and Type of Report

Manuscript Completed (date)
Date Published (month, year)
Author(s), Editor(s)
Contractor name and address

Prepared for
Division
Office
U.S. Nuclear Regulatory Commission
Washington, D.C. 20545
NRC FIN No.

OFFICIAL USE ONLY

EXHIBIT 10
SAMPLE BACK COVER FOR A CONTRACTOR REPORT CONTAINING
OFFICIAL USE ONLY INFORMATION

OFFICIAL USE ONLY

OFFICIAL USE ONLY

EXHIBIT 11
SAMPLE COVER FOR A CONTRACTOR REPORT CONTAINING
LIMITED OFFICIAL USE INFORMATION

LIMITED OFFICIAL USE

NUREG/CR-XXXX (S)

Title
Subtitle and Type of Report

Author(s), Editor(s)
Contractor
Prepared for
U.S. Nuclear Regulatory Commission

WITHHOLD FROM PUBLIC DISCLOSURE

LIMITED OFFICIAL USE

EXHIBIT 12
SAMPLE TITLE PAGE FOR A CONTRACTOR REPORT CONTAINING
LIMITED OFFICIAL USE INFORMATION

LIMITED OFFICIAL USE

NUREG/CR-XXXX (S)

Title

Subtitle and Type of Report

Manuscript Completed (date)
Date Published (month, year)
Author(s), Editor(s)
Contractor name and address

Prepared for
Division
Office
U.S. Nuclear Regulatory Commission
Washington, D.C. 20545
NRC File No.

LIMITED OFFICIAL USE

EXHIBIT 13
SAMPLE BACK COVER FOR A CONTRACTOR REPORT CONTAINING
LIMITED OFFICIAL USE INFORMATION

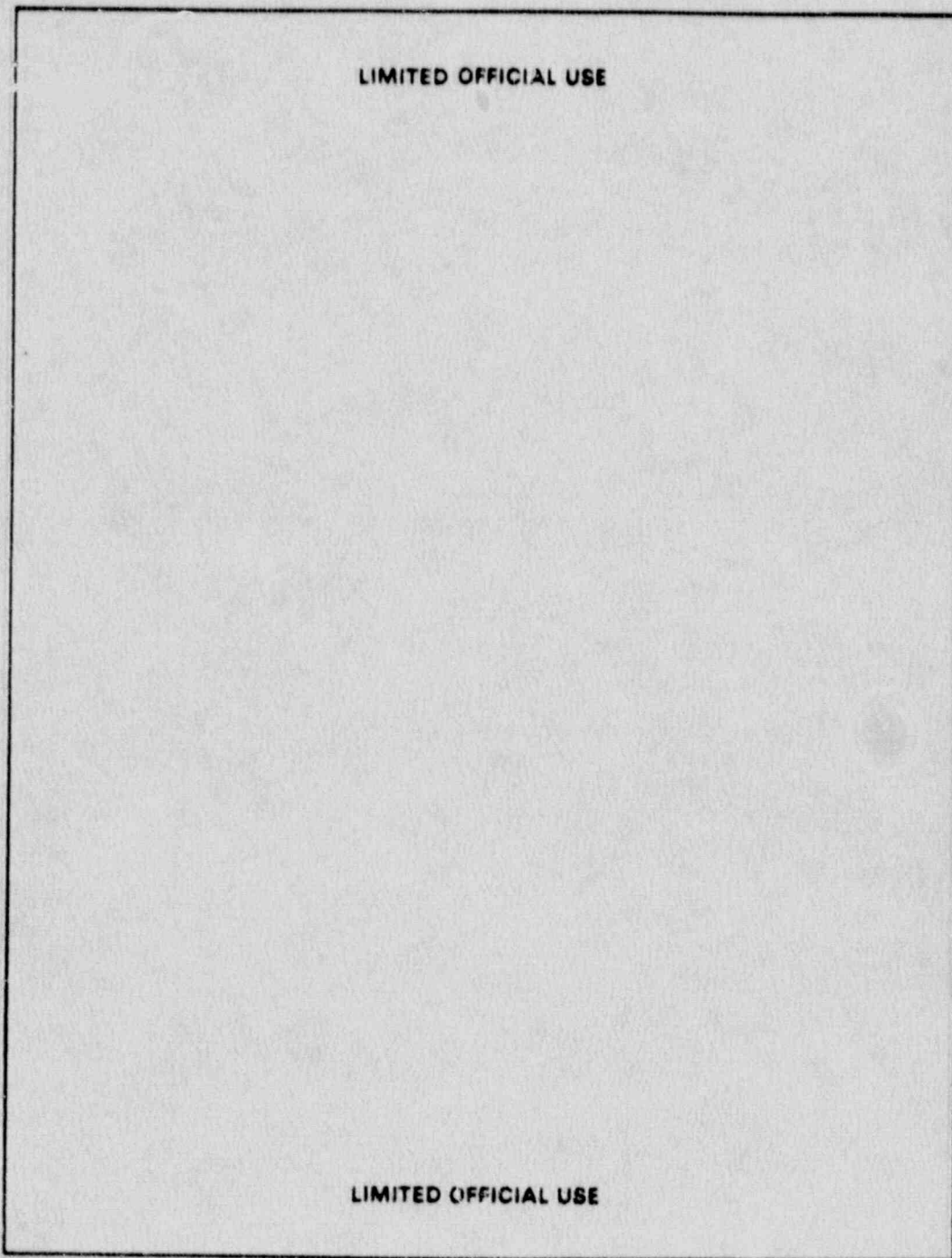


EXHIBIT 14
SAMPLE COVER FOR A CONTRACTOR REPORT CONTAINING
PROPRIETARY INFORMATION OBTAINED FROM A U.S. ORGANIZATION

PROPRIETARY INFORMATION

NUREG/CR-XXXX (P)

Title
Subtitle and Type of Report

Author(s): Editor(s)
Contractor
Prepared for
U.S. Nuclear Regulatory Commission

TRADE SECRET, OR PRIVILEGED, OR CONFIDENTIAL,
COMMERCIAL, OR FINANCIAL INFORMATION

This document contains information
submitted to NRC by:

Name of Company and Name of Submitter

which has been determined (which is claimed)
to be proprietary in accordance with 10CFR
2.790 (b); 10CFR 9.5; 10CFR Part 21; and is
exempt from mandatory public disclosure pur-
suant to 10CFR Part 9.

WITHHOLD FROM PUBLIC DISCLOSURE

Signature, Title and Office (Date)

PROPRIETARY INFORMATION

EXHIBIT 15
SAMPLE COVER PAGE FOR A CONTRACTOR REPORT CONTAINING
PROPRIETARY INFORMATION OBTAINED FROM A FOREIGN SOURCE

PROPRIETARY INFORMATION

NUREG/CR XXXX (P)

Title
Subtitle and Type of Report

Author(s), Editor(s)
Contractor
Prepared for
U.S. Nuclear Regulatory Commission

FOREIGN INFORMATION

This document contains information
submitted to NRC by

Name of Company and Name of Submitter

which is described in 10CFR 2.790 (d)(2)
and is exempt from mandatory public disclosure
pursuant to 10CFR Part 8

WITHHOLD FROM PUBLIC DISCLOSURE

Signature, Title and Office (Date)

PROPRIETARY INFORMATION

EXHIBIT 16
SAMPLE TITLE PAGE FOR A CONTRACTOR REPORT CONTAINING
PROPRIETARY INFORMATION OBTAINED FROM A U.S. ORGANIZATION

PROPRIETARY INFORMATION

NUREG/CR-XXXX (P)

Title
Subtitle and Type of Report

Manuscript Completed (date)
Date Published (month, year)

Author(s), Editor(s)
Contractor name and address

Prepared for
Division
Office
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
NRC File No.

TRADE SECRET OR PRIVILEGED OR CONFIDENTIAL
COMMERCIAL OR FINANCIAL INFORMATION

This document contains information submitted
to NRC by

Name of Company and Name of Submitter

which has been determined (which is claimed)
to be proprietary in accordance with 10CFR
2.790 (b) (10CFR 9.5) (10CFR Part 21) and is
exempt from mandatory public disclosure pur-
suant to 10CFR Part 9

WITHHOLD FROM PUBLIC DISCLOSURE

Signature, Title and Office (Date)

PROPRIETARY INFORMATION

EXHIBIT 17
SAMPLE TITLE PAGE FOR A CONTRACTOR REPORT CONTAINING
PROPRIETARY INFORMATION OBTAINED FROM A FOREIGN SOURCE

PROPRIETARY INFORMATION

NUREG/CR-XXXX (P)

Title

Subtitle and Type of Report

Manuscript Completed: (date)
Date Published: (month, year)

Author(s): Editor(s):

Manuscript Completed: (date)
Date Published: (month, year)

Author(s): Editor(s):
Contractor name and address

Prepared for
Division
Office
U.S. Nuclear Regulatory Commission
Washington, D.C. 20556
NRC File No.

FOREIGN INFORMATION

This document contains information
submitted to NRC by

(Name of Company and Name of Submitter)

which is described in 10CFR 2.790 (d)(2)
and is exempt from mandatory public disclosure
pursuant to 10CFR Part 9

WITHHOLD FROM PUBLIC DISCLOSURE

(Signature, Title and Office) (Date)

PROPRIETARY INFORMATION

EXHIBIT 18
SAMPLE BACK COVER FOR A CONTRACTOR REPORT CONTAINING
PROPRIETARY INFORMATION

PROPRIETARY INFORMATION

PROPRIETARY INFORMATION

EXHIBIT 19
COVER SHEET FOR REPORT CONTAINING PROPRIETARY INFORMATION

PROPRIETARY INFORMATION

NOTICE

THE ATTACHED DOCUMENT CONTAINS "PROPRIETARY INFORMATION" AND SHOULD BE HANDLED AS NRC "OFFICIAL USE ONLY" INFORMATION. IT SHOULD NOT BE DISCUSSED OR MADE AVAILABLE TO ANY PERSON NOT REQUIRING SUCH INFORMATION IN THE CONDUCT OF OFFICIAL BUSINESS AND SHOULD BE STORED, TRANSFERRED, AND DISPOSED OF BY EACH RECIPIENT IN A MANNER WHICH WILL ASSURE THAT ITS CONTENTS ARE NOT MADE AVAILABLE TO UNAUTHORIZED PERSONS.

COPY. _____
DOCKET NO. _____
CONTROL. _____
REPORT. _____
REC'D W/LTR DTD. _____

PROPRIETARY INFORMATION

Approved December 10, 1980

Approved: August 29, 1984

EXHIBIT 20
SAMPLE COVER FOR A CONTRACTOR REPORT CONTAINING
UNCLASSIFIED SAFEGUARDS INFORMATION

SAFEGUARDS INFORMATION

NUREG/CR XXXX (SG)

Title
Subtitle and Type of Report

Author(s), Editor(s)
Contractor

Prepared for
U.S. Nuclear Regulatory Commission

The determination that this document contains
safeguards information was made by

(Name) (Title) (Organization) (Date)

Violation of protection requirements of 10CFR
73.21 subject to civil or criminal penalties

SAFEGUARDS INFORMATION

EXHIBIT 21
SAMPLE TITLE PAGE FOR A CONTRACTOR REPORT CONTAINING
UNCLASSIFIED SAFEGUARDS INFORMATION

SAFEGUARDS INFORMATION

NUREG/CR-XXXX (SG)

Title

Subtitle and Type of Report

Manuscript Completed (date)
Date Published (month year)

Author(s) Editor(s)
Contractor name and address

Prepared for
Division
Office
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555
NRC File No.

SAFEGUARDS INFORMATION

EXHIBIT 22
SAMPLE BACK COVER FOR A CONTRACTOR REPORT CONTAINING
UNCLASSIFIED SAFEGUARDS INFORMATION

SAFEGUARDS INFORMATION

SAFEGUARDS INFORMATION

EXHIBIT 23
COVER SHEET FOR A CONTRACTOR REPORT CONTAINING
UNCLASSIFIED SAFEGUARDS INFORMATION

SAFEGUARDS INFORMATION

THIS DOCUMENT CONTAINS INFORMATION WHICH MUST BE PROTECTED FROM UNAUTHORIZED DISCLOSURE. 10 CFR 73.21 AND SECTION 147, ATOMIC ENERGY ACT OF 1954 APPLY. VIOLATIONS ARE SUBJECT TO CIVIL OR CRIMINAL PENALTIES.

THIS DOCUMENT IS NOT TO BE LEFT UNATTENDED OR ACCESSIBLE TO UNAUTHORIZED PERSONS. WHEN NOT IN USE, IT MUST BE STORED IN A LOCKED SECURITY STORAGE CONTAINER.

IT IS YOUR RESPONSIBILITY TO PROTECT THE INFORMATION CONTAINED IN THIS DOCUMENT FROM COMPROMISE, THEFT OR UNAUTHORIZED DISCLOSURE.

SAFEGUARDS INFORMATION

PART VI

HANDLING OF UNCLASSIFIED INFORMATION ON NRC COOPERATIVE PROGRAMS WITH FOREIGN GOVERNMENTS AND ORGANIZATIONS AND WITH U.S. INDUSTRY

The Nuclear Regulatory Commission has requested that its Program Offices establish, to the extent feasible, cooperative nuclear safety research programs that involve either or both U.S. industry and foreign governments and organizations. Such involvement includes monetary contributions, information exchange, and comments on program plans and results. This is authorized in 42 U.S.C. 5801. To this end, international and U.S. industry agreements have been signed that provide for transmitting unclassified information from NRC to participants. These procedures apply only to NRC-managed work not programatically funded by DOE.

The interests of all NRC cooperative nuclear safety research program participants are served best by early, rapid dissemination for comment of information on these programs developed for NRC by NRC contractors. This can be accomplished by distribution of "Draft Preliminary Reports (or Codes)" for comment for a specified period of time, followed by issue as formal NUREG/CR reports, with the concurrence of the participants. Specific procedures for accomplishing these goals and for transmitting information prepared by the NRC and DOE facilities and contractors and their subcontractors working on these programs are presented in the following sections. The procedures detailed here have been agreed to by DOE and have been provided to the responsible DOE Operations Officers and NRC Program and Project Managers as guidance.

A. PREPARATION OF DRAFT PRELIMINARY REPORTS FOR COMMENT

The first issuance of information by a contractor shall be designated "Draft Preliminary Report (or Code)," and shall include the cover sheet shown in Exhibit 24.

The following notice is to be printed on the bottom of the cover sheet (Exhibit 24):

NOTICE

THIS DRAFT PRELIMINARY REPORT IS ISSUED ONLY TO
PARTICIPANTS IN THE DESIGNATED COOPERATIVE PROGRAM

This report was prepared in contemplation of Commission action. It has not have received patent review and may contain information received in confidence. Therefore, the contents of this report should neither be disclosed to others nor reproduced, wholly or partially, unless written permission to do so has been obtained from the appropriate USNRC office. The recipient is requested to take the necessary action to ensure the protection of this report.

This notice has been agreed to by the legal staffs of both NRC and DOE and is not to be added to or changed. Any problem in this regard shall be brought to the attention of the NRC project manager, who will consult with the NRC legal staff.

The "Draft Preliminary Report (or Code)" shall be submitted by first class or express mail by the contractor to the NRC project manager, with the letter shown in Exhibit 25, in the number of copies specified by the project manager (in most instances this will be fewer than 20 copies). The contractor (DOE facility, contractor or subcontractor or other contractor) may retain copies only for internal use. DOE facilities and contractors and their subcontractors shall not distribute copies of this draft report to DOE/TIDC. Draft reports may be distributed to interested DOE program offices. Subsequent issues of the information shall also be designated "Draft Preliminary Report (or Code)" until the NRC project manager authorizes preparation of a NUREG/CR report.

"Draft Preliminary Reports (or Codes)" shall not be identified as NUREG/CR reports or carry any contractor report number or NRC distribution codes.

B. DISTRIBUTION BY NRC PROJECT MANAGERS

The NRC project manager will distribute the copies received only to (1) the participants in the program, (2) the NRC staff with a need-to-know, and (3) others authorized by the program or project manager. Transmittal to participants shall be by first class or express mail, including air mail to foreign participants. If premium cost mail services are to be used, a Division Director or comparable or higher authority must certify to the need on NRC Form 420, "Request for Premium Cost Mail Service." Premium cost mail is:

1. Express Mail, Priority Mail (First Class weighing more than 12 ounces)
2. International Express Mail (Air Mail weighing more than 10 ounces)

(See Chapter NRC-0255-058 and NRC Appendix 0255, Part V, Annex A)

C. COMMENT PERIOD AND ISSUANCE OF NUREG/CR REPORT

A minimum of six months will be allowed for comments and resolution of comments. At the end of the comment period, the NRC project manager shall, with the concurrence of the participants, authorize the contractor to issue the information as a NUREG/CR report in accordance with the provisions of this Chapter.

D. REPORT IDENTIFIERS

The "Draft Preliminary Reports (or Codes)" will be uniquely identified only by the Financial Identification Number (FIN) assigned by NRC and

the appropriate periodic notation, if any, included in the title (Exhibit 24). They shall not be given standard report nomenclature until the NRC project manager authorizes publication as a NUREG/CR report. At that time, the contractor may add its own designation below the NUREG/CR number, as shown in Exhibits 3 and 4.

E. MAILING TO PROGRAM PARTICIPANTS

The physical transmission of reports from NRC to program participants shall be handled by the Document Management Branch (DMB), Division of Technical Information and Document Control (TIDC), based on address labels of participants supplied by the project manager. The transmittal sheet shown in Exhibit 26 shall be used to transmit the documents and the labels to DMB.

F. SECURITY

If information included in the report or code has been determined to be sensitive unclassified or classified information (see statement of work) the procedures of Part V also apply. The report (or code) may not be classified solely for the purpose of limiting distribution to the participants.

EXHIBIT 24
SAMPLE COVER FOR A DRAFT PRELIMINARY REPORT (CODE)
FOR COMMENT

DRAFT PRELIMINARY REPORT (CODE) FOR COMMENT

FIN NO. _____

Title of Program

Subtitle for This Report, Including
Appropriate Periodic Notation, If Any
(e.g., First Quarter, Issue No. 1)

Prepared by (Name of DOE Facility, Contractor and/or
Subcontractors, if any)

for

U.S. Nuclear Regulatory Commission

NOTICE

**THIS DRAFT PRELIMINARY REPORT IS ISSUED ONLY TO
PARTICIPANTS IN THE DESIGNATED COOPERATIVE PROGRAM**

This report was prepared in contemplation of Commission action. It has not received patent review and may contain information received in confidence. Therefore, the contents of this report should neither be disclosed to others nor reproduced, wholly or partially, unless written permission to do so has been obtained from the appropriate USNRC office. The recipient is requested to take the necessary action to ensure the protection of this report.

EXHIBIT 25
**TRANSMITTAL LETTER FROM CONTRACTOR TO NRC PROJECT
MANAGER FOR DRAFT PRELIMINARY REPORT**

TO: NRC Project Manager

SUBJECT: DRAFT PRELIMINARY REPORT (CODE) ON
(PROGRAM TITLE) FOR COMMENT

The enclosed "Draft Preliminary Report (Code)" is being submitted for comment. It is our understanding that the comment period shall extend six months from the date of mailing of the draft to the participants. Upon resolution of the comments after that period and with concurrence of the cooperative program participants, the NRC Program Manager will authorize publication of this report in the NUREG/CR series under the provisions of NRC Manual Chapter 1102 or 3202.

DOE Facility or Contractor Representative

EXHIBIT 26

TRANSMITTAL SHEET FOR REQUESTING
MAILING TO COOPERATIVE PROGRAM
PARTICIPANTS

Recipients: Addresses on attached labels

Method of Mailing:

- First Class Postal Service to U. S. addresses
- Express mail to U. S. addresses*
- Air mail to foreign addresses*
- Surface mail to foreign addresses
(may require up to three (3) months)

THIS MAILING CONTAINS NO PROPRIETARY INFORMATION OR OTHER
SENSITIVE UNCLASSIFIED INFORMATION

Special Instructions:

Individual Requesting Mailing:

Project Manager or High Authority

Enclosures:

1. Address labels
2. Documents to be mailed

*If premium cost mail services are to be used, a Division Director or comparable or higher authority must certify to the need on NRC Form 420, "Request for Premium Cost Mail Service." Premium cost mail is:

1. Express Mail, Priority Mail (First Class weighing more than 12 ounces)
2. International Express Mail (Air Mail weighing more than 10 ounces)

(See Chapter NRC 0255-058 and NRC Appendix 0255, Part V, Annex A)

REVISED 8/89

**BILLING INSTRUCTIONS FOR
FIXED PRICE CONTRACTS**

General: The contractor shall prepare vouchers or invoices as prescribed herein. FAILURE TO SUBMIT VOUCHERS/INVOICES IN ACCORDANCE WITH THESE INSTRUCTIONS WILL RESULT IN REJECTION OF THE VOUCHER/INVOICE AS IMPROPER.

Form: Claims shall be submitted on the payee's letterhead, voucher/invoice, or on the Government's Standard Form 1034, "Public Voucher for Purchases and Services Other than Personal," and Standard Form 1035, "Public Voucher for Purchases Other than Personal--Continuation Sheet." These forms are available from the U. S. Government Printing Office, 701 North Capitol Street, Washington, D.C. 20801.

Number of Copies: An original and three copies shall be submitted. Failure to submit all the required copies will result in rejection of the voucher/invoice as improper.

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

U. S. Nuclear Regulatory Commission
Division of Contracts and Property Management
Contract Administration Branch, Mailstop F-902
Washington, D.C. 20555

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

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

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

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

Agency Payment Office: Payment will continue to be made by the office designated in the contract in Block 13 of SF 26 or Block 25 of SF 33, whichever is applicable.

Frequency: The contractor shall submit an voucher or invoice only after NRC's final acceptance of services rendered or products delivered in performance of the contract unless otherwise specified in the contract.

Preparation and Itemization of the Voucher/Invoice: The voucher/invoice shall be prepared in ink or by typewriter (without strikeouts). Corrections or erasures must be initialed. To be considered a proper voucher/invoice, all of the following elements must be included:

1. Contract number
2. Sequential voucher/invoice number.
3. Date of voucher/invoice.
4. Project Officer's name and mailstop as designated in the contract.
5. Payee's name and address. (Show the name of the contractor and its correct address. In addition, when an assignment of funds has been made by the contractor, or a different payee has been designated, include the name and address of the payee.) Indicate the name and telephone number of the individual responsible for answering questions the NRC may have regarding the voucher/invoice.
6. Description of articles or services, quantity, unit price, and total amount.
7. Weight and zone of shipment, if shipped by parcel post.
8. Charges for freight or express shipments. Attach prepaid bill if shipped by freight or express.
9. Instructions to consignee to notify the Contracting Officer of receipt of shipment.
10. For Indefinite Delivery contracts or contracts under which progress payments are authorized, the final voucher/invoice shall be marked "FINAL VOUCHER" or "FINAL INVOICE."

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

Supersession: These instructions supersede any previous billing instructions.

APPENDIX B

US NUCLEAR REGULATORY COMMISSION

PHASE I - SBIR-90-079 - PROJECT SUMMARY

Program Office	TTM	Proposal No.	Topic No.
Name and Address of Proposer			
FUTURE RESOURCES ASSOCIATES INC. 2000 Center Street, Suite 418 Berkeley, California, 94704			
Name and Title of Principal Investigator			
Robert J. Budnitz, President			
Title of Project			
"Scoping Analysis of LWR Shutdown Accidents Initiated by Earthquakes and Internal Fires"			
Technology, Research Thrust and/or Potential Commercial Application (Limit to 8 words maximum)			
Evaluation of Earthquake and Fire LWR Shutdown Accidents			
Technical Abstract (Limit to 200 words)			

There has recently been heightened concern for the possibility that nuclear power-plant accidents during shutdowns could be important contributors to the overall risk profile of these plants. The 1986 Soviet accident at Chernobyl was the principal event that led to this heightened concern, but a few recent events at U.S. plants have also contributed. Today, it is widely understood that the risk of accidents starting during shutdown conditions cannot be ignored. To address this concern, the U.S. Nuclear Regulatory Commission will be actively studying a variety of issues in the next few years. This proposed project, to examine shutdown accidents arising due to earthquakes and internal fires as initiators, will address one piece of the overall shutdown-accident picture. The proposed project, which will use two existing nuclear plants as case-study examples, will study technical specifications, relevant Licensee Event Reports, shutdown-configuration studies, the fire initiator data base during shutdowns, information about and which equipment might be compromised by earthquakes during shutdown. The project will perform an integrated evaluation of the information assembled, to develop insights into which aspects of nuclear power plant operations could be most susceptible to risk-significant accidents from earthquakes and internal fires.

**Anticipated Results/Implication of the Approach (Both Phases I and II/
Potential Commercial Application of Research**

If the proposed project is successful, safety decision-makers will have much better insights about shutdown-accident risks arising from earthquakes and internal fires. Because the broad issue of shutdown-accident risk is just now receiving the increased attention that it deserves, the understanding of risks from these two major "external initiators" will assist NRC and industry decision-makers to invest effort more wisely on the interlocking set of safety issues during shutdown. This could be of major importance in the coming two or three years.

C. IDENTIFICATION AND SIGNIFICANCE OF THE PROBLEM OR OPPORTUNITY

C.1 Identification of the Problem

Recently, there has been heightened concern for the possibility that accidents during shutdowns could be important contributors to the overall risk profile of nuclear power plants. The 1986 Soviet accident at Chernobyl was the principal event that led to this heightened concern, but a few recent events at U.S. plants have also contributed to this concern.

To address the post-Chernobyl concern, several studies were completed shortly thereafter, both in the U.S. and abroad. The initial studies mainly concentrated on technical issues such as reactivity questions that were directly relevant to the Chernobyl accident. Later, a few additional studies were performed looking more broadly at scenarios under which shutdown events might lead to accidental core damage or accidental releases of radioactivity.

Nevertheless, today there is insufficient appreciation for the possibility that accidents starting when nuclear power plants are in a shutdown condition may be highly risk-significant. More to the point, the issue has not yet been understood well enough by the technical community; therefore, it is not known, one way or the other, whether the level of safety assurance is as high for potential shutdown accidents as it is for potential accidents initiated during full-power operation.

To address this concern, the U.S. Nuclear Regulatory Commission in the past three years has been carrying out a few research projects aimed at specific aspects of the overall problem. Recently, there have been informal indications that these few projects may be supplemented ---- better, may be superseded ---- by a substantial new NRC program with coordinated major objectives, milestones, and significant financial backing.

In the view of the authors of this proposal, such a major new research program is badly needed, in the sense that without it the NRC and the public will not possess the high level of assurance vis-a-vis shutdown accidents that is desirable to supplement the high assurance that the NRC currently possesses vis-a-vis accidents at power.*

Even if such a major new research program could be initiated immediately, the results would not be available for at least a year or more, perhaps even two or three years. Furthermore, because so little is now known about the types of shutdown accidents that might occur or their probabilities and consequences, it is not now possible to prioritize the large number of research topics potentially researchable. What is now needed in the area of shutdown accidents, in the view of the authors of this proposal, is a

* Please note that this proposal deals only with shutdown accidents, not with accidents at low power. This narrow scope is necessary in order to accomplish any reasonable amount of work for the small SBIR Phase I budget allocation of \$50,000. The authors of this proposal believe that all of the types of concerns related to shutdown accidents also exist for accidents initiated while LWRs are at very low power, although technically the specific issues are very different in detail.

directed set of well-planned scoping studies to scope out the overall issues. Only after such a set of studies has been performed can a properly based and well-rounded research program be undertaken.

This proposal deals with one piece of the overall issue: specifically, we propose a scoping study of shutdown accidents initiated by earthquakes and internal fires. It is our conviction that earthquakes and internal fires are among the issues that must be addressed in a scoping sense before a well-rounded broad research effort on shutdown accidents can be undertaken.

The Need: The need for the proposed project can thus be succinctly stated as follows: in order to assist regulatory decision-makers to understand shutdown accident risks, information is needed about potential shutdown accident scenarios initiated by earthquakes and internal fires. At first, a scoping study is needed to narrow the overall scope to a manageable number of specific issues that may need further investigation.

If this proposed project is successful, regulatory decision-makers, the industry, and the public will have a better understanding than currently of the potential risks associated with these types of potential accidents. We anticipate that:

- o some potential issues may turn out to be more important than currently appreciated, thereby requiring additional investigation, and that
- o some other potential issues may turn out to be relatively unimportant, and can therefore be dismissed without further study.

C.2 Significance of the Problem

The importance of potential shutdown accidents in the context of overall reactor safety has been recognized for a long time, but with heightened concern in the past few years. Nevertheless, even today most full-scope PRAs do not treat shutdown accidents, and the attention paid to them in the deterministic arena of NRC regulations is also relatively minor. Indeed, the attention to this category across-the-board, by industry as well as by the NRC, has in all likelihood been less than is merited in terms of their overall potential role in reactor safety.

We believe that the two major types of "external initiators", earthquakes and internal fires, certainly deserve study as one part of the overall examination of shutdown accidents. If the significance of these types of potential accidents can be evaluated objectively, and a context developed for the insights that are available, decision-makers would benefit enormously.

Today, most decision-makers, in both the utility industry and the NRC, do not even begin to understand the issues that this project will address. Once this project has been completed, decision-makers will no longer be "in the dark" about shutdown accidents involving earthquakes and internal fires.

2. BACKGROUND, TECHNICAL APPROACH, AND ANTICIPATED RESULTS

2.1 Background and Introduction

Introduction: The motivation for this project stems from two observations:

- o It is now widely recognized that accidents initiated by "external events", in particular from earthquakes and internal fires, can be significant contributors to core-damage frequency when nuclear power reactors are at full power.
- o Recently, there have been indications --- but no convincing understanding one way or the other --- that internally-initiated events during reactor shutdown may be associated with core-damage frequencies and radioactive releases that could be of concern, in the sense that they could be significant fractions of the at-power core-damage frequencies and/or radioactive releases.

However, there has been no systematic study of the interface between these two issues --- an interface involving shutdown accidents initiated by earthquakes and internal fires. Today, very little is known about such potential accidents, in terms of either their frequencies, their consequences, or even what types of scenarios may occur.

A further consideration is the possibility that certain types of internal fires --- for example, those involving transient fuels such as lubricants and cleaning compounds --- may have higher frequencies during shutdowns than during periods of at-power operation due to increased maintenance, repair, equipment replacement, and shutdown housecleaning activities.

Still further, seismic vulnerabilities may be enhanced because of the potential presence of heavy components (such as the reactor head, heavy doors and lids, etc.) in different configurations during shutdown than during full-power operation. Other types of equipment may also be more seismically vulnerable while disassembled for maintenance.

Purpose: The purpose of this project is to perform an initial scoping review: specifically, to scope out safety issues related to potential LWR shutdown accidents initiated by earthquakes and internal fires, so as to provide insight into what the main safety issues might be that would merit further technical investigation.

Background: As far as the authors of this proposal can ascertain, very little is known about shutdown accidents initiated by external events.

More is known about shutdown accidents initiated by so-called "internal events", although even here not enough is known. In any event, it is not feasible in this short SBIR proposal to provide an in-depth review of what is and isn't known about shutdown accidents generally. Suffice it to point out that the concern about shutdown accidents appears to have been generated primarily by several recent events at both U.S. and foreign power reactors, which have caused the degradation of at least some important engineered safeguard equipment provided to assure high margins of safety. Examples include partial or even total losses of offsite and onsite power, partial compromises of decay-heat-removal capability, and so on.

Indeed, NRC established Generic Issue 99, "Improved Reliability of RHR Capability in PWRs", in part to examine this issue. To support GI 99, researchers at Brookhaven National Laboratory performed a PRA-type scoping study of the frequency of potential core-damage events due to insufficient decay heat removal during shutdown conditions. Using the Zion PWR as a reference plant, the study found that the frequency of such events was in the range of 5×10^{-6} per year. While this single study cannot be taken as applicable to other plants, it does represent an indication that shutdown events cannot be ignored.

However, the Brookhaven study did not include "externally initiated" events such as earthquakes or internal fires, nor to our knowledge are there any other PRA-type shutdown analyses that have considered external events, as pointed out above.

Ways to Obtain Insights: There are several ways to obtain technical insights into the potential seriousness of earthquake-initiated and fire-initiated shutdown accidents. We have identified four different ways, and in this proposed project each of these will be explored in a scoping review:

- 1) The first and most obvious way is to examine actual events, documented in LERs or in other types of event reports, involving internal fires or earthquakes during shutdowns, and any adverse consequences thereof. While this approach may be a useful start, the authors believe that by itself such a review can only provide a piece of the overall puzzle. That is, we believe that it may provide information about the types of initiating events worthy of further study, but surely won't by itself reveal the extent of the potential problems, if any --- that can only be revealed by analysis taking into consideration the other three types of information discussed next.
- 2) The second approach is examining shutdown configurations involving compromises of capability to respond, given an important fire or earthquake initiator. There is some information about which types of compromised shutdown configurations are present, and for how long. This information is another category of the input information for our proposed project.
- 3) The third approach is examining technical specifications and related administrative constraints during shutdowns. This type of information will help to provide insight into what is and isn't allowed in terms of compromising the necessary safety system response capabilities.
- 4) The fourth approach is to examine the initiator data base for both internal fires and earthquakes. This can help to illuminate which types of equipment, in which combinations and frequencies, could be compromised by the postulated fires or earthquakes.

Taken together, the above four categories of information will form the "raw material" or "feedstock" for our proposed scoping study. Having gathered whatever is available in these categories, the investigators propose to digest it, perform an integrated examination of the significance of the findings, and develop any safety insights available from the integrated evaluation.

Measures of Importance: It may be feasible to develop rough measures of "importance", including approximate quantitative estimates of potential core-damage frequencies from specific types of scenarios uncovered. A few other measures of "importance", such as those commonly found in the PRA literature, may also be used if appropriate. Although numerical importance indicators will be sought, the investigators believe that qualitative importance designations, involving considerable expert judgment, may be the principal outcome of the proposed evaluation.

Finally, the investigators believe that it may be feasible to develop rough (high-medium-low) indications of the relative importance ranking of the issues found to be of potential interest. Again, these rankings will probably be heavily based on expert judgment.

D.2 Technical Approach of the Proposed Study

The technical approach of the proposed study builds in part on recent work accomplished under NRC and DOE support by Dr. Budnitz and Mr. Davis on external events, and in part on other work by NRC on shutdown accidents more generally.

The approach will be directed toward a scoping study rather than a fully complete analysis. This restriction, necessary because of budgetary constraints, means that not all potentially important issues can be studied in depth. Rather, the intent is to concentrate on identifying issues that can be pursued in greater depth after this project has been completed, and evaluating their safety significance, including a priority ranking where feasible.

The technical approach will involve selecting two case-study LWRs (a PWR and a BWR), and for each doing the following survey-type work related to earthquake-initiated and fire-initiated shutdown accidents:

- o relevant shutdown-configuration studies will be examined;
- o relevant shutdown-status tech specs will be examined;
- o relevant shutdown-status LERs and related reports will be examined;
- o the fire initiator data base during shutdowns will be examined;
- o relevant equipment failures during earthquakes will be analyzed.

The heavy weighting toward issue identification rather than in-depth analysis will rely on the very broad experience of the two investigators, Dr. Budnitz and Mr. Davis. Each has been involved with all of the related technical issues for many years, and each brings both knowledge and experience to the analysis and examination of the source information.

"Safety significance" will be determined based on either of two types of figures-of-merit:

- o the first will be risk-based, using PRA-type bottom-line figures-of-merit such as core-damage frequency and offsite risk;
- o the second will be deterministic-based, using figures-of-merit related to NRC's deterministic safety criteria, such as those in the General Design Criteria, the "adequate protection" criterion, and comparability to current NRC treatment of accidents-at-power in the Standard Review Plan and applicable Regulatory Guides.

These qualitative figures-of-merit will then be evaluated, using expert judgment to determine whether further technical investigation is merited for each to be identified.

2.3 Anticipated Results

This Phase I SBIR study, to cover six months at a support level of \$50,000, will produce the following specific results:

- (1) A scoping review will be performed of shutdown-status technical specifications relevant to the two case-study plants used in this analysis.
- (2) Shutdown-configuration information relevant to the two case-study plants used in this analysis will be developed and reviewed.
- (3) A review will be performed of the initiator data base for fires during shutdown status at nuclear power plants.
- (4) A review will be performed to pinpoint which equipment could be compromised by earthquakes during shutdown, with emphasis on equipment in unusual configurations because of the shutdown status.
- (5) Based on the results above, an integrated examination will be performed to develop insights into which aspects of nuclear power-plant operations could be most susceptible to risk-significant accidents from earthquakes and internal fires during shutdowns. Specifically, the significance of any safety issues will be estimated, and any issues meriting further technical investigation will be identified and a rough priority ranking will be assigned where feasible.

Although the \$50,000 allocated in this project means that the effort will be of a scoping rather than a comprehensive character, it is anticipated that the integrated evaluation will reveal important insights into at least a few issues. Some of those insights can be illuminated through further research, possibly in some cases through performing better analyses and sensitivity studies to gain further understanding. It is anticipated that a second follow-on project under Phase II of the SBIR Program may be proposed by the same team of investigators, covering 12 months at a level of about \$125,000 to \$150,000. In this second Phase, further research, trial analyses, and/or sensitivity studies would be proposed to explore some of the issues identified in the Phase I evaluation. (Of course, some of the issues identified in Phase I may not be amenable to this type of follow-on work: they may require physical experimentation, extensive data-gathering, the building and testing of a complex computer-based phenomenological model, and so on.)

D.4 Phase I as a Foundation for Phase II

It is clear from the discussion just above that Phase II would be a natural follow-on to Phase I. To be specific, the Phase I effort, which is limited in both resources and time duration, will scope out the key issues concerning earthquake-initiated and fire-initiated shutdown accidents, but will not attempt to resolve all of the issues by thorough examination and evaluation. The sequencing of Phase I and Phase II is fully consistent with the approach of the SBIR Program.

E. PHASE I TECHNICAL OBJECTIVES

The specific technical objectives of the Phase I research are four in number:

Objective 1: To perform a review of the relevant literature on shutdown accidents, including both PRA and non-PRA literature. The topics to be covered will include prior literature on configurations, technical specifications, the initiator data base on fires, and equipment potentially compromised by earthquakes during shutdowns.

Objective 2: To estimate the significance of any safety issues identified, both qualitatively and quantitatively in a risk sense to the extent feasible.

Objective 3: To identify any issues that merit further technical investigation, and to develop approximate high-medium-low priority assignments where feasible based on the significance estimates in Objective 2.

Objective 4: To document the review in a report written in NUREG-publishable format and style.

As indicated earlier in this proposal, the Phase II project that is projected as a possible follow-on to this proposed Phase I effort would perform further research, trial analyses, and/or sensitivity studies to explore some of the issues identified in the Phase I evaluation.

E. PHASE I WORK PLAN

The Phase I work plan is keyed to the four objectives identified just above. The work plan consists of nine tasks, whose links to the project objectives are shown in the following table:

<u>Task</u>	<u>Brief Description</u>	<u>Linked to Which Objective</u>
Task 1	Obtain all PRA and non-PRA literature relevant to the project	Objective 1
Task 2	Select two plants (BWR, PWR) as case studies	Objective 1
Task 3	Analyze shutdown-configuration studies relevant to the two case-study plants	Objective 1
Task 4	Analyze shutdown-status technical specifications relevant to the two case-study plants	Objective 1
Task 5	Analyze relevant LERs or other reports that have examined shutdown-status events	Objective 1
Task 6	Examine the initiator data base on fires during shutdown status	Objective 1
Task 7	Analyze information on which equipment could be compromised by earthquakes during shutdown	Objective 1
Task 8	Integration task: identify safety issues; develop insights into safety significance of issues identified; and assign priorities for further investigation where feasible	Objectives 2, 3
Task 9	Prepare the final project report	Objective 4

Task 1 Obtain all PRA and non-PRA literature relevant to the project

This Task is the initial information-gathering phase of the proposed project. The two investigators (Dr. Budnitz and Mr. Davis) are already familiar with almost all of the PRA literature currently available on external initiators --- indeed, most of it is in their possession now. Obtaining the information relevant to shutdown accidents will be done through contacts within both the NRC and the utility industry. In fact, the schedule should not be affected at all by the work in this initial task, because most of the information can be obtained in the two months between when the SBIR project award is made and when the contract will officially begin.

One result of this task will be a collection of literature that can be compiled into a bibliography, for publication in the project final report.

Task 2 Select two plants (BWR, PWR) as case studies

It is expected that members of the NRC staff can assist in the identification of the two plants to be studied. The plants selected should have completed a recent full-scope PRA, including external events; should have easily accessible regulatory documentation (technical specifications, etc.); and should be willing and available to assist the project through inquiries of an informational nature as needed.

The NRC staff will need to pave the way toward making utility information available. Perhaps two of the NUREG-1150 plants could be used, although several other plants also appear to be good prospective candidates.

Task 3 Analyze shutdown-configuration studies relevant to the two case-study plants

The desired configuration information includes which different types of configurations occur most commonly, and for what durations, during shutdowns at the two case-study plants selected. For example, during a multi-week refueling outage, different types of equipment are typically taken out of service, for different durations and in different combinations. Sometimes the durations of the different combinations of disabled equipment are quite short (hours) but sometimes they can be quite long (weeks). It will be necessary to gather and assess whatever is known about this issue.

It is recognized that the data base on this subject may be weak, especially if significant detail is sought. However, it should be feasible to obtain broad categories of configuration information, including the typical duration during which the reactor-vessel head is removed; the duration during which containment is open and not easily closable; the duration of compromises of various decay-heat-removal equipment or the needed support systems; and so on.

It may be necessary to adapt information gathered at another LWR plant to one or both of the case-study plants being used in this project --- for example, to adapt data from another specific BWR to the BWR to be studied here. Such an adaptation will not be 100% adequate, of course, which means that an assessment will be necessary as to the relevance of the information for the purposes here.

Task 4 Analyze shutdown-status technical specifications relevant to the two case-study plants

This task should not be difficult, since the relevant technical specifications are not very complicated, and the investigators are quite familiar with the issues involved. The objective is to apply tech-spec limitations (limiting conditions for operation, etc.) as a template for bounding the approximate out-of-service conditions of various systems and functions during shutdowns.

It is worth noting that the investigators suspect that the applicable tech specs may not be very extensive, or very helpful in limiting the scope of

the evaluation of this project --- especially as related to external initiators like earthquakes and internal fires. However, this will be studied and documented during the project, and the investigators have an open mind as to what might be uncovered.

If any administrative controls are in place that effectively govern shutdown operations, even if not formally adopted as tech specs, these will be included in our input information. This could include administrative controls for "hot work", for heavy equipment during shutdowns, for welding or lubricant/cleaning-fluid use, and the like.

Task 5 Analyze relevant LERs or other reports that have examined shutdown-status events

The very extensive LER literature is not easy to study without some way to narrow down the scope of inquiry. It is expected that, with the assistance of NRC staff --- perhaps in AEOD as well as RES --- the search can be narrowed to a useful and manageable sub-set. We expect that NRC's continuing LER project at Oak Ridge can be a resource in this regard.

We expect that the LER evaluation will be useful mainly in identifying possible unusual scenarios that might not readily emerge from the other types of analyses we will perform. Specifically, if one begins with the typical PRA event trees that delineate scenarios for reaching core-damage status, the specific initiating events (usually classified broadly into LOCAs, transients, and perhaps one or more other categories) may not adequately incorporate the odd-type initiators found in the LER reports. In our opinion, this is more likely for shutdown events than for at-power events, which is what makes the LER review so potentially important.

We suspect that the LERs themselves may not capture all of the richness of information about odd shutdown events, because the reporting requirements for events during shutdown status may be looser than for at-power events. Therefore, we will also attempt to study other event literature to obtain whatever else is available.

Task 6 Examine the initiator data base on fires during shutdown status

There is now an extensive and standard fire-initiator data base used in fire PRAs. Both the recent Sandia data base and the data base being assembled and updated by EPRI will be the starting points for the work in this Task.

We will be searching for ways to differentiate fire-initiation frequencies during shutdown from similar frequencies during at-power status. It is our suspicion that the initiating-event frequencies could be substantially higher, although we do not know this for sure. Also, we suspect that there may be categories of fire events, not common at full power, that may occur relatively more frequently during shutdowns.

Task 7 Analyze information on which equipment could be compromised by earthquakes during shutdown

By now there is an extensive body of literature about which types of equipment are most susceptible to damage from earthquakes of different sizes, ranging from sizes below the SSE to earthquakes much larger than the SSE. One useful (although broad) summary of this data base is in the screening guidance for the NRC and EPRI seismic-margin methodologies, in which certain broad categories of equipment are set down in tabular form as being generically quite strong against earthquakes if certain caveats are applicable. Other types of equipment are known to be potentially quite vulnerable, even at low levels of seismic excitation.

Dr. Budnitz is very familiar with this data base, and has worked with it extensively in recent years.

The intent of this task is to develop broad categories of seismically-vulnerable equipment, so as to provide input to the integration work of the subsequent Task 8. This information will be used to develop possible scenarios in which earthquake-caused equipment damage during shutdown status could lead to unacceptable core-damage sequences given the outage conditions of other equipment.

The emphasis here will be on unusual configurations of equipment that might be quite different during shutdowns than during at-power operation.

Task 8 Integration task: identify safety issues; develop insights into safety significance of issues identified; and assign priorities for further investigation where feasible

This Task is the heart of the project. It will occupy a major fraction of the project's effort, and will be the focus of all of the prior work.

The essential work will be of the following types:

- o First, all of the LER, configuration, tech-spec, fire-initiator, and seismic-vulnerability information will be assembled and studied in an integrated manner. The objective will be to develop accident scenarios worthy of further consideration. Because the work will be a screening-type effort, potential scenarios will be screened in at this stage if there is even a small chance that they may later prove to be "important". The methodology used for this work will be a PRA-type approach using event-tree-type accident scenarios as the basic template for the scenarios studied here. (We will start with the standard PRA event trees for the two case-study plants being examined, while recognizing that they may not be fully adequate.)
- o Second, those scenarios developed will be examined in detail, one-by-one, to discover what specific features make them "important" from a safety perspective. For example, consider two hypothetical fire-initiation shutdown scenarios: one scenario might stand out because of an unusually high fire-initiation frequency during a specific but

ordinary shutdown configuration, while the other might stand out because the vulnerable shutdown status is unusually susceptible although the fire-initiation frequency is no higher than during at-power periods. These types need to be differentiated, scenario-by-scenario. Here the expert judgment of the investigators will come into play, in order to sort the potentially important from the unimportant.

- o Third, an attempt will be made, for each scenario judged of possible safety significance, to develop approximate numerical estimates of core-damage frequency and offsite risk significance if possible. This may be feasible for some scenarios, but could be impossible --- or nearly so --- for others if the necessary input data are lacking. As one example, data simply may not exist concerning just how frequently a specific vulnerable shutdown configuration actually occurs at a given plant, but the scenario could be judged potentially important enough to highlight as a "possible concern". As another example, data may not exist as to how frequently a given initiator event could occur --- for example, a given unusual type of fire or earthquake of a given size --- but again the scenario might be judged potentially important enough to highlight as a "possible concern."
- o Fourth, an attempt will be made to provide a rough high-medium-low priority ranking for each scenario judged to be worth highlighting. This ranking will be entirely based on expert judgment (although accounting for quantitative information wherever available), and unabashedly so! The idea is to provide such a ranking for the subsequent use of NRC or industry decision-makers. To the extent that all of the underlying information to support the high-medium-low rankings is provided, a different judgment can be made by any other expert.
- o Finally, to the extent that the significance of a specific scenario is uncertain, an attempt will be made to point out what further technical information could be developed to enhance our understanding of that scenario. This information could be better data, or a better engineering analysis, or better understanding of operational issues.

All of the above information, taken together, will comprise the "results" of this project.

Task 9 Prepare the final project report

This Task is self-explanatory.

G. PHASE I STATEMENT OF WORK

G.1 Project Objectives

Objective 1: To perform a review of the relevant literature on shutdown accidents, including both PRA and non-PRA literature. The topics to be covered will include prior literature on configurations, technical specifications, the initiator data base on fires, and equipment potentially compromised by earthquakes during shutdowns.

Objective 2: To estimate the significance of any safety issues identified, both qualitatively and quantitatively in a risk sense to the extent feasible.

Objective 3: To identify any issues that merit further technical investigation, and to develop approximate high-medium-low priority assignments where feasible based on the significance estimates in Objective 2.

Objective 4: To document the review in a report written in NUREG-publishable format and style.

G.2 Scope of Work

The work to be performed consists of the following nine tasks:

- Task 1 Obtain all PRA and non-PRA literature relevant to shutdown accident risks (LERs, initiator studies, configuration studies, tech specs, PRAs, etc.)
- Task 2 Select two plants (BWR, PWR) as case studies
- Task 3 Analyze shutdown-configuration studies relevant to the two case-study plants
- Task 4 Analyze shutdown-status technical specifications relevant to the two case-study plants
- Task 5 Analyze relevant LERs or other reports that have examined shutdown-status events
- Task 6 Examine the initiator data base on fires during shutdown status
- Task 7 Analyze information on which equipment could be compromised by earthquakes during shutdown
- Task 8 Integration task: identify safety issues; develop insights into safety significance of issues identified; and assign priorities for further investigation where feasible
- Task 9 Prepare the final project report

G.3 Performance Schedule

Task 1	to be completed one month after project initiation
Task 2	to be completed one month after project initiation
Task 3	to be completed four months after project initiation
Task 4	to be completed four months after project initiation
Task 5	to be completed four months after project initiation
Task 6	to be completed four months after project initiation
Task 7	to be completed four months after project initiation
Task 8	to be completed five months after project initiation.
Task 9	to be completed six months after project initiation.

G.4 Deliverable

Consistent with the SBIR solicitation to which this proposal responds, the sole deliverable shall be a Final Report containing the results of all work on the first eight tasks.

H. FACILITIES

No special facilities or equipment will be needed for this project.

I. CONSULTANTS

No outside consultants are planned specifically for use in this proposed project.

J. RELATED WORK

The study team (Dr. Budnitz and Mr. Davis) has accomplished much related work recently, that bears directly on the subject matter of this project. The key current and recent projects are:

- 1) Dr. Budnitz has been one of the major technical participants in recent years in the entire area of external-initiators PRA research. He has completed many other projects, has served as the external-events consultant and participant for both NUREG-1050 (the NRC's "PRA Reference Document", 1984) and the 1987 draft version of NUREG-1150, has chaired important technical meetings and sessions, has written extensively on the subject, and is considered one of the experts in this field.
- 2) Dr. Budnitz, together with Dr. Howard E. Lambert, recently completed an SBIR project for NRC entitled "Evaluation of the Reliability and Usefulness of External-Initiator PRA Methodologies". It has been published as NUREG/CR-5477 (1989), and is the most recent up-to-date review of external-events PRA methodologies.
- 3) Dr. Budnitz recently participated in the NRC-supported project leading to publication of NUREG/CR-5042, "Evaluation of External Hazards to Nuclear Power Plants in the United States" (Ref. Kimura and Budnitz, 1987), in collaboration with LLNL. He personally wrote the sections of this report

covering internal fires and external flooding, and was involved in all of the other sections (high winds, transportation, earthquakes).

4) Dr. Budnitz is currently working in a key technical support role for the NRC's "External Events Steering Group", providing consultation on a variety of topics involving externally-initiated accidents. His current assignment involves supporting both the internal-fires subcommittee and the seismic subcommittee of the EESG.

5) Dr. Budnitz is also currently working with LLNL on a project to advise NRC on the technical guidance on how utilities should perform the external-initiators parts of the IPE.

6) Dr. Budnitz, in collaboration with David Moore of Energy Incorporated, is currently working on a project for NRC to expand the scope of the seismic-margins methodology to include better consideration of the risk significance of identified vulnerabilities, of non-seismic-related failures, and of human factors. This work is a Phase II SBIR follow-on of a Phase I SBIR project completed by the same authors in 1987, under NRC support, entitled "Extending a HCLPF-Based Seismic Margin Review to Analyze the Potential for Large Radiological Releases and the Importance of Human Factors and Non-Seismic Failures" (by R.J. Budnitz, D. Moore, J. Young, and R. Breeding, 1987)

7) Dr. Budnitz, in collaboration of Dr. Vojin Joksimovich of Accident Prevention Group, recently completed a project under NRC support and funded through Brookhaven, resulting in the publication of NUREG/CR-4812, "Content of PRA Submittals for Future LWRs" (by R.J. Budnitz and V. Joksimovich, 1988). This report provides guidance to applicants for new plant designs as to how their PRA submission must be developed and documented. Dr. Budnitz wrote, among other chapters, the chapter covering external initiators emphasizing earthquakes and internal fires.

8) Dr. Budnitz was the Chairman (1985 - 1987) of NRC's "Expert Panel on Seismic Margins", that developed the widely-acclaimed new seismic-margin review methodology for studying existing plants (Ref. Budnitz/Expert Panel, 1985; Prassinis/Expert Panel, 1986). Dr. Budnitz oversaw the intellectual work that developed the approach, and wrote major parts of the methodology guidance reports. In the course of that three-year effort, he was also the Chairman of the review panel that oversaw the Maine Yankee trial seismic-margin review (Ref. Prassinis/Maine Yankee, 1987), and the Chairman of the panel that reviewed EPRI's seismic-margin methodology (Ref. EPRI/Margins, 1987) for NRC.

9) Dr. Budnitz and Dr. Howard E. Lambert completed an important recent study for NRC on the role of relay chatter, breaker trip, and human stress in seismic-initiated accidents (NUREG/CR-4910, by R.J. Budnitz, H. Lambert, and E. Hill, 1987). A presentation at the ANS/ENS Zurich PSA meeting in 1987 (Budnitz, 1987), based on this report, was honored as the ANS Nuclear Reactor Safety Division "Best Paper of 1987".

10) Dr. Budnitz is the principal technical consultant to the International Atomic Energy Agency in the area of external-initiators PRA, and is currently responsible for developing an external-initiators-PRA guidance document for IAEA, due to be published in late 1990.

11) Dr. Budnitz recently served (1989) as the Chairman of an NRC-supported, LLNL-sponsored "Expert Panel on Seismic Hazard Decision-Making" that examined the current state-of-the-art of seismic-hazard evaluations, from the perspective of advising on how grouping of the site-specific hazards could best be accomplished to identify hazard "outliers" among the existing reactor sites.

12) Dr. Budnitz has served since 1986 on the outside peer-review group for the Brookhaven "Seismic Component Fragility Research Program" supported by NRC. Through that work he has become intimately familiar with issues concerning the seismic fragility of equipment, especially electrical equipment.

13) Mr. Davis is considered an expert on the systems-analysis part of PRA. He has completed many single-issue PRA studies of different plants, reviewed many full-scope PRAs, and written extensively on PRA methodological issues.

14) Mr. Davis is currently Chairman of the Hatch Seismic Margin Assessment's peer review group. This activity involves examining the Hatch plant, using both the EPRI success-path methodology and the NRC fault-tree/event-tree methodology, for seismic vulnerabilities at an acceleration twice the Hatch SSE. This activity has involved examination of many seismic issues directly relevant to this proposed work.

15) Mr. Davis is an active consultant to the ACRS in several areas, including Extreme External Phenomena, Seismic Interactions, Decay Heat Removal, and Station Blackout. Knowledge gained from these activities is directly relevant to the proposed work.

16) Mr. Davis has recently reviewed fire risk methodology applications for two reactor PRAs (the Brunswick fire PRA and the N-Reactor fire PRA) and is familiar with the state-of-the-art fire PRA methodology and insights gained from recent applications.

K. KEY PERSONNEL

Key personnel are Robert J. Budnitz (Principal Investigator, and the President of FRA), and Peter R. Davis, a private consultant (PRD Consulting, Idaho Falls) who is also a Senior Associate of FRA. Mr. Davis has done much research work over the last few years in collaboration with Dr. Budnitz.

L. POTENTIAL POST APPLICATIONS

In the spirit of the SBIR Program, the proposed project clearly has potential applications that will be of commercial benefit to Future Resources Associates, Inc. Specifically, the completion of this project should open up an additional business area of providing safety analysis and consultation to the many utilities whose current understanding of shutdown

accidents related to earthquakes and internal fires is weak or non-existent.

In addition, the information produced will be of benefit more generally, to decision-makers in both the utility industry and the NRC involved with externally-initiated accidents during shutdown status.

M. CURRENT AND PENDING SUPPORT

No proposal substantially similar to this one is now either funded, pending, under consideration, or soon to be submitted to any governmental or commercial sponsor.

N. PRE-EXISTING RELEVANT PATENTS AND INVENTIONS

The proposed work does not directly relate to nor is it dominated by any pre-existing patents or patent applications owned or controlled by the FRA.

O. BUDGET

The proposed budget for this project is \$ 50,000.00 (see attached Standard Form 1411.) The budget breakdown is approximately as follows:

Task 1	Obtain literature	\$	1,000
Task 2	Select two plants (BWR, PWR)		1,000
Task 3	Analyze configuration studies		6,000
Task 4	Analyze technical specifications		3,000
Task 5	Analyze LERS, related reports		7,000
Task 6	Examine fire data base during shutdown		5,000
Task 7	Examine seismic information		5,000
Task 8	Integration task		20,000
Task 9	Final report		2,000

P. INFORMATION ON APPLICANTS' CURRENT RESEARCH COMMITMENTS

Each of the key personnel listed in Section K of this proposal (Dr. Budnitz, Mr. Davis) has sufficient time available during the proposed period of performance to carry out the time commitments made here.

Dr. Budnitz has time commitments for about 25% of his time during October through December 1990, and less than 20% thereafter during 1991. Mr. Davis has commitments over the project period for less than 40% of his time. None of the time commitments poses a problem with executing the proposed project.

Q. CURRICULUM VITAE

The curriculum vitae of Dr. Robert J. Budnitz (the proposed Principal Investigator) is attached in abbreviated form as part of this proposal.

REFERENCES FOR THE PROPOSAL TEXT

- Brookhaven, 1988: Brookhaven National Laboratory, "Improved Reliability of Residual Heat Removal Capability in PWRs as Related to Generic Issue No. 99", Report NUREG/CR-5015 (1988)
- Budnitz, 1984: R.J. Budnitz, "External Initiators in Probabilistic Reactor Analysis ---- Earthquakes, Fires, Floods, Winds", Risk Analysis 4, 323 (1984)
- Budnitz/Expert Panel, 1985: R.J. Budnitz, P.J. Amico, C.A. Cornell, W.J. Hall, R.P. Kennedy, J.W. Reed, and M. Shinozuka, "An Approach to the Quantification of Seismic Margins in Nuclear Power Plants", Lawrence Livermore National Laboratory, Report NUREG/CR-4334 (1985)
- Budnitz, 1987: R.J. Budnitz, "Recent Developments in Methodology and Applications for Seismic PRA", paper published in proceedings of PSA'87 Symposium, International Topical Conference on PSA and Risk Management, sponsored by European Nuclear Society and American Nuclear Society, Zurich (1987)
- Budnitz and Lambert, 1989: R.J. Budnitz and H.E. Lambert, "An Evaluation of the Reliability and Usefulness of External-Initiator PRA Methodologies", Future Resources Associates, Inc. and U.S. Nuclear Regulatory Commission, Report NUREG/CR-5477 (1989)
- EPRI/Margins, 1988: NTS Engineering, RPK Structural Mechanics Consulting, Pickard Lowe & Garrick, and Woodward Clyde Consultants, and Duke Power Company, "A Methodology for Assessment of Nuclear Power Plant Seismic Margin", Electric Power Research Institute, Report EPRI-NP-6041 (1988)
- Kimura and Budnitz, 1987: C.Y. Kimura and R.J. Budnitz, "Evaluation of External Hazards to Nuclear Power Plants in the United States", Report NUREG/CR-5042, Lawrence Livermore Laboratory (1987); Supplement 1 to same NUREG report, same title, by P.G. Prassinis (1988)
- NRC, GI 99: U.S. Nuclear Regulatory Commission, Generic Issue No. 99, "Improved Reliability of RHR Capability in PWRs"
- Prassinis/Expert Panel, 1986: P.G. Prassinis, M.K. Ravindra, and J.B. Savy, "Recommendations to the Nuclear Regulatory Commission on Trial Guidelines for Seismic Margin Reviews of Nuclear Power Plants", Lawrence Livermore National Laboratory, Report NUREG/CR-4482 (1986)
- Prassinis/Maine Yankee, 1987: P.G. Prassinis, R.C. Murray, G.E. Cummings, M.K. Ravindra, G.S. Hardy, P.S. Hashimoto, M.J. Griffin, D.L. Moore, D.M. Jones, M.D. Quilici, and J. Young, "Seismic Margin Review of the Maine Yankee Atomic Power Station", Lawrence Livermore National Laboratory, Report NUREG/CR-4826 (1987)
- Sandia/Fire Risk Scoping Study, 1988: J.A. Lambright, S.P. Nowlen, V.F. Nicolette, and M.P. Bohn, "Fire Risk Scoping Study: Investigation of Nuclear Power Plant Fire Risk, Including Previously Unaddressed Issues", Sandia National Laboratories, Report NUREG/CR-5088 (1988)

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RESUME of ROBERT J. BUDNITZ

Birth October 12, 1940 in Pittsfield, Massachusetts

Family Married, three children

Education Yale University, New Haven, Connecticut
 B.A. Physics (1961)
 Harvard University, Cambridge, Massachusetts
 M.A. Physics (1962)
 Ph.D. Physics (1968)

Present Professional Position

President, Future Resources Associates, Inc. (since 1981)

Past Professional Positions

Teknekron, Inc.
Berkeley, California

1980 - 1981 Vice President, and Director of the Energy and Environmental Technologies Division

U.S. Nuclear Regulatory Commission
Washington, D.C.

1979 - 1980 Director, Office of Nuclear Regulatory Research

1978 - 1979 Deputy Director, Office of Nuclear Regulatory Research

Lawrence Berkeley Laboratory
University of California, Berkeley

1978 - 1980 Leave of Absence Status

1975 - 1978 Associate Director of LBL, and Head, Energy & Environment Division

1974 - 1975 Program Leader, LBL Environmental Research Program

1971 - 1974 Physicist, LBL Environmental Research Program

1967 - 1968 Post-Doctoral Physicist, LBL High-Energy Physics Program

RESUME of ROBERT J. BUDNITZ

Other Professional Activities (Partial Listing Relevant to This Proposal)

Chairman, Senior External Events Review Group, Office of New Production Reactor, U.S. Department of Energy (1990 - present)

Member, High-Level Review Committee, Savannah River Site PRA, U.S. Department of Energy (1989 - present)

Member, Peer Review Group for the Hope Creek Risk Assessment, Public Service Electric and Gas Company (1989 - present)

Member, N Reactor PRA Independent Review Board, Westinghouse Hanford Company (1989 - present)

Chairman, Advanced Reactor Peer Review Group, U.S. Nuclear Regulatory Commission (1987 - 1988)

Chairman, Expert Panel on Seismic Design Margins, U.S. Nuclear Regulatory Commission (1984 - 1987)

Chairman, Expert Panel on Plant Aging, Battelle Pacific Northwest Laboratory for U.S. Nuclear Regulatory Commission (1987)

U.S. Coordinator, Case Studies Preparation Task for "Manual on Probabilistic Safety Assessment and Its Application in Safety Decisions", International Atomic Energy Agency, Vienna (1984 - present)

Member, Review Group on Nuclear Reactor Research Integration, Idaho National Engineering Laboratory/EG&G-Idaho (1987 - present)

Member, Advisory Panel on Seismic Component Fragilities, Brookhaven National Laboratory (1986 - present)

Chairman, Panel to Review EPRI's Seismic Margin Methodology, U.S. Nuclear Regulatory Commission (1987)

Chairman, Peer Review Group, Maine Yankee Seismic Margin Study, U.S. Nuclear Regulatory Commission (1986 - 1987)

Chairman, Seabrook Emergency Planning Zone Study Peer Review Group, New Hampshire Yankee Division, Public Service Company of New Hampshire (1985 - 86)

Member, Chernobyl Advisory Panel, Electric Power Research Institute (1986-1987)

Member, Improved Confinement Review Panel, Savannah River Laboratory, E.I. DuPont de Nemours, Inc. (1986 - 1987)

Member, National Academy of Sciences, Energy Engineering Board (1983 - 1986)

Member, Risk Assessment Review Group (the 'Lewis Committee'), U.S. Nuclear Regulatory Commission (1977 - 1979)

Member, Reactor Safety Study Group, American Physical Society (1974 - 1975)

RESUME of ROBERT J. BUDNITZ

Publications (Partial Listing Relevant to This Proposal)

"An Evaluation of the Reliability and Usefulness of External-Initiator PRA Methodologies", R.J. Budnitz and H.E. Lambert, Report NUREG/CR-5477, Future Resources Associates, Inc. and U.S. Nuclear Regulatory Commission (1989)

"Individual Plant Examination for External Events: Guidance and Procedures", R.C. Murray, P.G. Prassinis, J.B. Savy, D.L. Bernreuter, G.E. Cummings, R.J. Budnitz, and M.K. Ravindra, Report NUREG/CR-5259, Lawrence Livermore National Laboratory and U.S. Nuclear Regulatory Commission (1989)

"Individual Plant Examination for External Events: Review Plan and Evaluation Criteria", R.C. Murray, P.G. Prassinis, J.B. Savy, D.L. Bernreuter, G.E. Cummings, R.J. Budnitz, and M.K. Ravindra, Report NUREG/CR-5260, Lawrence Livermore National Laboratory and U.S. Nuclear Regulatory Commission (1989)

"The Safety of Current LWRs Against Earthquake-Initiated Accidents", R.J. Budnitz, Proceedings of the 7th Pacific Basin Nuclear Conference, American Nuclear Society, San Diego (1990)

"Evaluation of External Hazards to Nuclear Power Plants in the United States", C.Y. Kimura and R.J. Budnitz, Lawrence Livermore National Laboratory, Report NUREG/CR-5042, prepared for U.S. Nuclear Regulatory Commission (1987)

"Relay Chatter and Operator Response After a Large Earthquake: An Improved PRA Methodology with Case Studies", R.J. Budnitz, H.E. Lambert, and E.E. Hill, Future Resources Associates, Inc., Report NUREG/CR-4910, prepared for U.S. Nuclear Regulatory Commission (1987)

"Extending a HCLPF-Based Seismic Margin Review to Analyze the Potential for Large Radiological Releases and the Importance of Human Factors and Non-Seismic Failures", R.J. Budnitz, D.L. Moore, J. Young, and R.J. Breeding, Report by Future Resources Associates, Inc. to U.S. Nuclear Regulatory Commission (1987)

"Recent Developments in Methodology and Findings From Seismic PSA", R.J. Budnitz, presented at Advisory Group Meeting on Treatment of Hazards in PSA, sponsored by International Atomic Energy Agency, Vienna (1986)

"An Approach to the Quantification of Seismic Margins in Nuclear Power Plants", R.J. Budnitz, P.J. Amico, C.A. Cornell, W.J. Hall, R.P. Kennedy, J.W. Reed, and M. Shinozuka, Lawrence Livermore National Laboratory, Report NUREG/CR-4334, prepared for U.S. Nuclear Regulatory Commission (1985)

"Uncertainties in the Systems Analysis Part of Seismic Probabilistic Risk Assessment, Phase I Final Report", R.J. Budnitz and H.E. Lambert, report by Future Resources Associates to U.S. Nuclear Regulatory Commission (1984)

"External Initiators in Probabilistic Reactor Safety Analysis -- Earthquakes, Fires, Floods, Winds", Risk Analysis 4, 323 (1984)

"Risk Assessment Review Group Report to the U.S. Nuclear Regulatory Commission," H.W. Lewis, R.J. Budnitz, H.J.C. Kouts, W.B. Loewenstein, W.D. Rowe, F. von Hippel, and F. Zachariassen, NRC Report NUREG/CR-0400 (1978)

PART IV - REPRESENTATIONS AND INSTRUCTIONS

SECTION K - REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS

K.1 CONTINGENT FEE REPRESENTATION AND AGREEMENT (FAR 52.203-4) (APR 1984)

(a) Representation. The offeror represents that, except for full-time bona fide employees working solely for the offeror, the offeror--

(Note: The offeror must check the appropriate boxes. For interpretation of the representation, including the term "bona fide employee," see Subpart 3.4 of the Federal Acquisition Regulation.)

(1) has, has not employed or retained any person or company to solicit or obtain this contract; and

(2) has, has not paid or agreed to pay to any person or company employed or retained to solicit or obtain this contract any commission, percentage, brokerage, or other fee contingent upon or resulting from the award of this contract.

(b) Agreement. The offeror agrees to provide information relating to the above Representation as requested by the Contracting Officer and, when subparagraph (a)(1) or (a)(2) is answered affirmatively, to promptly submit to the Contracting Officer--

(1) A completed Standard Form 119, Statement of Contingent or Other Fees, (SF 119); or

(2) A signed statement indicating that the SF 119 was previously submitted to the same contracting office, including the date and applicable solicitation or contract number, and representing that the prior SF 119 applies to this offer or quotation.

(End of Provision)

K.2 TAXPAYER IDENTIFICATION (FAR 52.204-3) (SEP 1989)

(a) Definitions. "Common parent," as used in the solicitation provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

"Corporate status," as used in this solicitation provision, means

a designation as to whether the offeror is a corporate entity, an unincorporated entity (e.g., sole proprietorship or partnership), or a corporation providing medical and health care services.

"Taxpayer Identification Number (TIN)," as used in this solicitation provision, means the number required by the IRS to be used by the offeror in reporting income tax and other returns.

(b) The offeror is required to submit the information required in paragraphs (c) through (e) of this solicitation provision in order to comply with reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M and implementing regulations issued by the Internal Revenue Service (IRS). If the resulting contract is subject to reporting requirements described in 4.902(a), the failure or refusal by the offeror to furnish the information may result in a 20 percent reduction of payments otherwise due under the contract.

(c) Taxpayer Identification Number (TIN).

TIN: 94-2764380

TIN: has been applied for.

TIN: is not required because:

Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the U.S. and does not have an office or place of business or a fiscal paying agent in the U.S.;

Offeror is an agency or instrumentality of a foreign government;

Offeror is an agency or instrumentality of a Federal, state or local government;

Other. State basis. _____

(d) Corporate Status.

Corporation providing medical and health care services, or engaged in the billing and collecting of payments for such services;

Other corporate entity;

Not a corporate entity;

Sole proprietorship;

Partnership;

Hospital or extended care facility described in 26 CFR 501(c)(3) that is exempt from taxation under 26 CFR 501(a).

(e) Common Parent.

Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this clause.

Name and TIN of common parent;

Name _____
TIN _____

(End of Provision)

K.3 CERTIFICATION REGARDING DEBARMENT, SUSPENSION,
PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY
MATTERS (FAR 52.209-5) (MAY 1989)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that -

(i) The Offeror and/or any of its Principals -

(A) Are () are not () presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have () have not () within a 3-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; and

(C) Are () are not () presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a)(1)(i)(B) of this provision.

(ii) The Offeror has () has not () within a 3-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

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

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

(End of Provision)

K.4 TYPE OF BUSINESS ORGANIZATION (FAR 52.215-6) (JUL 1987)

The offeror or quoter, by checking the applicable box, represents that--

(a) It operates as a corporation incorporated under the laws of the State of California, () an individual, () a partnership, () a nonprofit organization, or () a joint venture; or

(b) If the offeror or quoter is a foreign entity, it operates as () an individual, () a partnership, () a nonprofit organization, () a joint venture, or () a corporation, registered for business in _____ (country).

(End of Provision)

K.5 AUTHORIZED NEGOTIATORS (FAR 52.215-11) (APR 1984)

The offeror or quoter represents that the following persons are authorized to negotiate on its behalf with the Government in connection with this request for proposals or quotations: (list names, titles, and telephone numbers of the authorized negotiators).

ROBERT J. BURNITZ, PRESIDENT

(415) 526-5111

(End of Provision)

K.6 PLACE OF PERFORMANCE (FAR 52.215-20) (APR 1984)

(a) The offeror or quoter, in the performance of any contract resulting from this solicitation, () intends, does not intend (check applicable box) to use one or more plants or facilities located at a different address from the address of the offeror or

quoter as indicated in this proposal or quotation.

(b) If the offeror or quoter checks "intends" in paragraph (a) above, it shall insert in the spaces provided below the required information:

Place of Performance (Street Address, City, County, State, Zip Code)	Name and Address of Owner and Operator of the Plant or Facility if Other than Offeror or Quoter
_____	_____
_____	_____
_____	_____
_____	_____

(End of Provision)

K.7 SMALL BUSINESS CONCERN REPRESENTATION
(FAR 52.219-1) (FEB 1990)

(a) Representation. The offeror represents and certifies as part of its offer that it X is, is not a small business concern and that X all, not all end items to be furnished will be manufactured or produced by a small business concern in the United States, its territories or possessions, Puerto Rico, or the Trust Territory of the Pacific Islands.

(b) Definition.

Small business concern, as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria and size standards in this solicitation.

(c) Notice. Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small business concern in paragraph (a) of this clause in order to obtain a contract to be awarded under the preference programs established pursuant to sections 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall (1) be punished by imposition of a fine, imprisonment, or both; (2) be subject to administrative remedies; and (3) be ineligible for participation in programs conducted under the authority of the Act.

(End of Provision)

K.8 SMALL DISADVANTAGED BUSINESS CONCERN REPRESENTATION
(FAR 52.219-2) (FEB 1990)

(a) Representation. The offeror represents that it X is, is not a small disadvantaged business concern.

(b) Definitions.

Asian Pacific Americans, as used in this provision, means United States citizens whose origins are in Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the U.S. Trust Territory of the Pacific Islands (Republic of Palau), the Northern Mariana Islands, Laos, Kampuchea (Cambodia), Taiwan, Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Republic of the Marshall Islands, or the Federated States of Micronesia.

Indian tribe, as used in this provision, means any Indian tribe, band, nation, or other organized group or community of Indians, including any Alaska Native Corporation as defined in 13 CFR 124.100 which is recognized as eligible for the special programs and services provided by the U.S. to Indians because of their status as Indians, or which is recognized as such by the State in which such tribe, band, nation, group, or community resides.

Native Americans, as used in this provision, means American Indians, Eskimos, Aleuts, and native Hawaiians.

Native Hawaiian Organization, as used in this provision, means any community service organization serving Native Hawaiians in, and chartered as a not-for-profit organization by, the State of Hawaii, which is controlled by Native Hawaiians, and whose business activities will principally benefit such Native Hawaiians.

Small business concern, as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria and size standards in 13 CFR part 121.

Small disadvantaged business concern, as used in this provision, means a small business concern that (a) is at least 51 percent unconditionally owned by one or more individuals who are both socially and economically disadvantaged, or a publicly owned business having at least 51 percent of its stock unconditionally owned by one or more socially and economically disadvantaged individuals and (b) has its management and daily business controlled by one or more such individuals. This term also means a small business concern that is at least 51 percent unconditionally owned by an economically disadvantaged Indian tribe or Native Hawaiian Organization, or a publicly owned business having at least 51 percent of its stock unconditionally owned by one of these entities which has its management and daily business controlled by members of an economically disadvantaged Indian tribe or Native Hawaiian Organization, and which meets the requirements of 13 CFR part 124.

Subcontinent Asian Americans, as used in this provision, means United States citizens whose origins are in India, Pakistan, Bangladesh, Sri Lanka, Bhutan, or Nepal.

(c) Qualified groups. The offeror shall presume that socially

and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Subcontinent Asian Americans, and other individuals found to be qualified by SBA under 13 CFR 124. The offeror shall presume that socially and economically disadvantaged entities also include Indian tribes and Native Hawaiian Organizations.

(End of Provision)

K.9 WOMEN-OWNED SMALL BUSINESS REPRESENTATION
(FAR 52.219-3) (APR 1984)

(a) Representation. The offeror represents that it () is, (X) is not a women-owned small business concern.

(b) Definitions.

"Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominate in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria and size standards in 13 CFR 121.

"Women-owned," as used in this provision, means a small business that is at least 51 percent owned by a woman or women who are U.S. citizens and who also control and operate the business.

(End of Provision)

K.10 PREFERENCE FOR LABOR SURPLUS AREA CONCERNS
(FAR 52.220-1) (APR 1984)

(a) This acquisition is not a set aside for labor surplus area (LSA) concerns. However, the offeror's status as such a concern may affect (1) entitlement to award in case of tie offers or (2) offer evaluation in accordance with the Buy American Act clause of this solicitation. In order to determine whether the offeror is entitled to a preference under (1) or (2) above, the offeror must identify, below, the LSA in which the costs to be incurred on account of manufacturing or production (by the offeror or the first-tier subcontractors) amount to more than 50 percent of the contract price.

NSNR

(b) Failure to identify the locations as specified above will preclude consideration of the offeror as an LSA concern. If the offeror is awarded a contract as an LSA concern and would not have otherwise qualified for award, the offeror shall perform the contract or cause the contract to be performed in accordance with the obligations of an LSA concern.

(End of Provision)

K.11 CERTIFICATION OF NONSEGREGATED FACILITIES
(FAR 52.222-21) (APR 1984)

(a) "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

(b) By the submission of this offer, the offeror certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The offeror agrees that a breach of this certification is a violation of the Equal Opportunity clause in the contract.

(c) The offeror further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will--

(1) Obtain identical certifications from proposed subcontractors before the award of subcontracts under which the subcontractor will be subject to the Equal Opportunity clause;

(2) Retain the certifications in the files; and

(3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR
CERTIFICATIONS OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract under which the subcontractor will be subject to the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

(End of Provision)

K.12 PREVIOUS CONTRACTS AND COMPLIANCE REPORTS
(FAR 52.222-22) (APR 1984)

The offeror represents that--

(a) It () has, (X) has not participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation, the clause originally contained in Section 310 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114;

(b) It () has, (X) has not filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

(End of Provision)

K.13 AFFIRMATIVE ACTION COMPLIANCE
(FAR 52.222-25) (APR 1984)

The offeror represents that--

(a) It () has developed and has on file, (X) has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or (b) It (X) has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

(End of Provision)

K.14 CLEAN AIR AND WATER CERTIFICATION
(FAR 52.223-1) (APR 1984)

The Offeror certifies that--

(a) Any facility to be used in the performance of this proposed contract is (), is not (X) listed on the Environmental Protection Agency List of Violating Facilities;

(b) The Offeror will immediately notify the Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the Offeror proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and

(c) The Offeror will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

(End of Provision)

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K.15 CERTIFICATION REGARDING A DRUG-FREE WORKPLACE (FAR 52.223-5) (JUL 1990)

(a) Definitions. As used in this provision,

"Controlled substance" means a controlled substance in schedules I through V of section 202 of the Controlled Substances Act (21 U.S.C. 812) and as further defined in regulation at 21 CFR 1308.11-1308.15.

"Conviction" means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes.

"Criminal drug statute" means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, possession or use of any controlled substance.

"Drug-free workplace" means the site(s) for the performance of work done by the Contractor in connection with a specific contract at which employees of the Contractor are prohibited from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance.

"Employee" means an employee of a Contractor directly engaged in the performance of work under a Government contract. "Directly engaged" is defined to include all direct cost employees and any other Contractor employee who has other than a minimal impact or involvement in contract performance.

"Individual" means an offeror/contractor that has no more than one employee including the offeror/contractor.

(b) By submission of its offer, the offeror, if other than an individual, who is making an offer that equals or exceeds \$25,000, certifies and agrees, that with respect to all employees of the offeror to be employed under a contract resulting from this solicitation, it will--no later than 30 calendar days after contract award (unless a longer period is agreed to in writing), for contracts of 30 calendar days or more performance duration, or as soon as possible for contracts of less than 30 calendar days performance duration; but in any case, by a date prior to when performance is expected to be completed--

(1) Publish a statement notifying such employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;

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(2) Establish an ongoing drug-free awareness program to inform such employees about-

(i) The dangers of drug abuse in the workplace;

(ii) The Contractor's policy of maintaining a drug-free workplace;

(iii) Any available drug counseling, rehabilitation, and employee assistance programs; and

(iv) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(3) Provide all employees engaged in performance of the contract with a copy of the statement required by subparagraph (b)(1) of this provision;

(4) Notify such employees in writing in the statement required by subparagraph (b)(1) of this provision, that as a condition of continued employment on the contract resulting from this solicitation, the employee will-

(i) Abide by the terms of the statement; and

(ii) Notify the employer in writing of the employee's conviction under a criminal drug statute for a violation occurring in the workplace no later than 5 days after such conviction;

(5) Notify the Contracting Officer in writing within 10 calendar days after receiving notice under subdivision (b)(4)(ii) of this provision, from an employee or otherwise receiving actual notice of such conviction. The notice shall include the position title of the employee;

(6) Within 30 days after receiving notice under subparagraph (b)(4)(ii) of this provision of a conviction, take one of the following actions with respect to any employee who is convicted of a drug abuse violation occurring in the workplace:

(i) Take appropriate personnel action against such employee, up to and including termination; or

(ii) Require such employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency.

(7) Make a good faith effort to maintain a drug-free workplace through implementation of subparagraphs (b)(1) through (b)(6) of this provision.

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(c) By submission of its offer, the offeror, if an individual who is making an offer of any dollar value, certifies and agrees that the offeror will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in the performance of the contract resulting from this solicitation.

(d) Failure of the offeror to provide the certification required by paragraph (b) or (c) of this provision, renders the offeror unqualified and ineligible for award. (See FAR 9.104-1(g) and 19.602-1(a)(2)(1).)

(e) In addition to other remedies available to the Government, the certification in paragraphs (b) or (c) of this provision concerns a matter within the jurisdiction of an agency of the United States and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

(End of Provision)

K.16 NOTICE OF RESTRICTIONS ON CONTRACTING WITH
SANCTIONED PERSONS (FAR 52.225-12) (MAY 1989)

(a) Statutory prohibitions have been imposed on contracting with sanctioned persons, as specified in Federal Acquisition Regulation (FAR) 52.225-13. Restrictions on Contracting with Sanctioned Persons.

(b) By submission of this offer, the Offeror represents that no products or services, except those listed in this paragraph (b), delivered to the Government under any contract resulting from this solicitation will be products or services of a sanctioned person, as defined in the clause referenced in paragraph (a) of this provision, unless one of the exceptions in paragraph (d) of the clause at FAR 52.225-13 applies.

Product or service	Sanctioned person
<u>NONE</u>	_____
_____	_____
_____	_____

(List as necessary)

(End of Clause)

K.17 CONTRACTOR ORGANIZATIONAL CONFLICTS OF INTEREST REPRESENTATION

I represent to the best of my knowledge and belief that:

The award to FUTURE RESOURCES ASSOCIATED INC. of a contract or the modification of an existing contract does / / does not involve situations or relationships of the type set forth in §20-1.5403(b).

(a) If the representation, as completed, indicates that situations or relationships of the type set forth in §20-1.5403(b) are involved, or the Contracting Officer otherwise determines that potential organizational conflicts of interest exist, the offeror shall provide a statement in writing which describes in a concise manner all relevant factors bearing on his representation to the Contracting Officer. If the Contracting Officer determines that organizational conflicts exist, the following actions may be taken:

- (1) Impose appropriate conditions which avoid such conflicts,
- (2) Disqualify the offeror, or
- (3) Determine that it is otherwise in the best interest of the United States to seek award of the contract under the waiver provisions of §20-1.5411.

(b) The refusal to provide the representation required by §20-1.5404(b), or upon request of the Contracting Officer, the facts required by §20-1.5404(c), must result in disqualification of the offeror for award. The nondisclosure or misrepresentation of any relevant interest may also result in the disqualification of the offeror for awards; or if nondisclosure or misrepresentation is discovered after award, the resulting contract may be terminated. The offeror may also be disqualified from subsequent related NRC contracts and be subject to such other remedial actions provided by law or the resulting contract.

(End of Provision)

K.18 CERTIFICATION REGARDING DEBARMENT STATUS (JUNE 1988)

The offeror hereby certifies by submission of this offer that it and any subcontractor(s) that will be performing under this contract is not a debarred person or firm.

(End of Provision)

K.19 QUALIFICATIONS OF CONTRACT EMPLOYEES (JUNE 1988)

The offeror hereby certifies by submission of this offer that all representations made regarding its employees, proposed subcontractor personnel and consultants are accurate.

(End of Provision)

K.20 CURRENT/FORMER AGENCY EMPLOYEE INVOLVEMENT (JUNE 1988)

The following representation is required for NRC information and evaluation purposes only. It is not NRC policy to encourage offerors and contractors to propose current/former agency employees to perform work under NRC contracts.

The offeror hereby certifies that there are () are not current/former NRC employees who have been or will be involved, directly or indirectly, in developing the offer, or in negotiating on behalf of the offeror, or in managing, administering or performing any contract, consultant agreement or subcontract resulting from this offer. For each individual so identified, the Technical and Management proposal contains as a separate attachment the name, title, date individual left NRC and a brief description of the individual's role under this proposal.

(End of Provision)

ROBERT J. BUONITTA, PRESIDENT and PRINCIPAL INVESTIGATOR,
WAS AN NRC EMPLOYEE FROM 8/1/78 TO 7/31/80.