

AWARD/CONTRACT

PDR-LL6

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

2. CONTRACT NO. NRC-26-94-261	3. EFFECTIVE DATE 6/01/94	4. REQUISITION/PROJECT NO. AED-94-261
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5. ISSUED BY Code: U.S. NUCLEAR REGULATORY COMMISSION DIVISION OF CONTRACTS & PROP. MGT. FIPS ACQUISITION BRANCH MAIL STOP T7-E41 WASHINGTON, DC 20555	6. ADMINISTERED BY Code: (If other than Item 5) US NUCLEAR REGULATORY COMMISSION DIVISION OF CONTRACTS & PROP. MGT. FIPS ACQUISITION BRANCH MAIL STOP T7-E41
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7. NAME AND ADDRESS OF CONTRACTOR PULAU ELECTRONICS CORPORATION 12443 RESEARCH PARKWAY SUITE 200 ORLANDO, FL 32826 Principal Investigator/Technical Contact: N/A Telephone No: N/A	8. DELIVERY [] FOB ORIGIN [X] OTHER (See below)
9. DISCOUNT FOR PROMPT PAYMENT N/A	

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

11. SHIP TO/MARK FOR CODE N/A	12. PAYMENT WILL BE MADE BY CODE US NUCLEAR REGULATORY COMMISSION DIV. OF ACCOUNTING & FINANCE, MD. NATIONAL BANK BLDG., RM 11104 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
 B&R NO:482-19-301-401; E8236; APP:31X0200 824
 \$258,746.55

15A. ITEM NO.	15B. SUPPLIES/SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
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See Continuation Sheet
See Schedule

15G. TOTAL AMOUNT OF CONTRACT \$258,746.55

EXCEPTION TO STANDARD FORM SF26 (REV. 4-85) Prescribed by GSA
 FAR(48 CFR) 53.214(a)

230011
 9406280077 940601
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 NRC-26-94-261 PDR

DF02

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CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE

17. CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 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) DONALD M. CAMPBELL PRESIDENT, TRAINING & SIMULATION	20A. NAME OF CONTRACTING OFFICER Mary Jo Mattia
19B. NAME OF CONTRACTOR by <u>Donald M. Campbell</u> (Signature of person authorized to sign)	20B. UNITED STATES OF AMERICA by <u>Mary Jo Mattia</u> (Signature of Contracting Officer)
19C. DATE SIGNED 31MAY1994	20C. DATE SIGNED June 1, 1994

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

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PART I - THE SCHEDULE

SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS

B.1 PROJECT TITLE

The title of this project is as follows:

SIMULATOR HARDWARE MAINTENANCE

[End of Clause]

B.2 BRIEF DESCRIPTION OF WORK (MAR 1987)
ALTERNATE 1 (JUN 1988)

(a) Brief description of work:

The Contractor shall provide technician level maintenance support for the five full-scope nuclear power plant simulators located at the Technical Training Center in Chattanooga, TN.

Maintenance outside the Principal Period of Maintenance and spare parts shall be performed on a cost reimbursable basis and placed by delivery order.

(b) Orders will be issued for work required by the NRC in accordance with 52.216-18 - Ordering. Only Contracting Officers of the NRC or other individuals specifically authorized under this contract may authorize the initiation of work under this contract. The provisions of this contract shall govern all orders issued hereunder.

[End of Clause]

B.3 ITEMS AND PRICES**BASE (CONTRACT - 6 MONTHS) JUNE 1 1994 - NOV 30 1994**

CLIN	DESCRIPTION	QT	UNIT	UNIT PRICE	TOTAL
001	Maintenance for the base period of six months within the Principal Period of Maintenance (PPM)	6	MOS	15,386	\$ 92,316.00
001a	Maintenance outside the PPM (NTE)	45	HRS	31.79	\$ 1,430.55
002	Option for one additional technician (NTE)	6	MOS	4,841	\$ 29,046.00
003	Spare Parts				<u>\$165,000.00</u>
	Handling Fee 10% NOT TO EXCEED \$500 PER ORDER				
TOTAL FIXED PRICE FOR CLINS 001, 001a and 003					\$258,746.55

FIRST OPTION YEAR - DEC 1 1994 - NOV 30 1995

101	Maintenance within the PPM	12	MOS	15,386	\$184,632.00
101a	Maintenance outside the PPM (NTE)	45	HRS	31.79	\$ 1,430.55
102	Option for one additional technician	12	MOS	4,841	\$ 58,092.00
103	Spare Parts-				<u>\$165,000.00</u>
	Handling Fee 10% NOT TO EXCEED \$500 PER ORDER				
TOTAL FIXED PRICE FOR CLINS 101, 101a and 103					\$351,062.55

SECOND OPTION YEAR - DEC 1 1995 - NOV 30 1996

201	Maintenance within the PPM	12	MOS.	15,694	\$188,328.00
201a	Maintenance outside the PPM	45	HRS.	32.43	\$ 1,459.35
202	Option for one additional technician	12	MOS.	4,937.50	\$ 59,250.00
203	Spare Parts				<u>\$165,000.00</u>
	Handling Fee 10% NOT TO EXCEED \$500 PER ORDER				
TOTAL FIXED PRICE FOR CLINS 201, 201a and 203					\$354,787.35

THIRD OPTION YEAR - DEC 1 1996 - NOV 30 1997

301	Maintenance within the PPM	12	MOS.	16,002	\$192,024.00
301a	Maintenance outside the PPM	45	HRS.	33.06	\$ 1,487.70
302	Option for one additional technician	12	MOS.	5,034	\$ 60,408.00
303	Spare Parts -				<u>\$165,000.00</u>
	Handling Fee 10% NOT TO EXCEED \$500 PER ORDER				
TOTAL FIXED PRICE FOR CLINS 301, 301a and 303					\$358,511.70

B.3 ITEMS AND PRICES (CONT)**FOURTH OPTION YEAR - DEC 1 1997 - NOV 30 1998**

401	Maintenance within the PPM	12	MOS.	16,322	\$195,864.00
401a	Maintenance outside the PPM	45	HRS.	33.72	\$ 1,517.40
402	Option for one additional technician	12	MOS.	5,135	\$ 61,620.00
403	Spare Parts				<u>\$165,000.00</u>
	Handling Fee 10% NOT TO EXCEED \$500 PER ORDER				
TOTAL	FIXED PRICE FOR CLINS 401 401a and 403				\$362,381.40

FIFTH OPTION PERIOD - DEC 1 1998 - MAY 31 1999

501	Maintenance for the months within the Principal Period of Maintenance (PPM)	6	MOS	16,642	\$ 99,852.00
502	Option for one additional technician	6	MOS	34.38 ^{5,236.10}	\$ 31,416.00
TOTAL	FIXED PRICE FOR CLIN 501				\$ 99,852.00

TOTAL ESTIMATED CONTRACT VALUE FOR YEAR 1 - 5	\$1,785,341.45
TOTAL AMOUNT OF OPTIONS	\$ 299,832.00
TOTAL AMOUNT OF ALL CLINS INCLUDING OPTIONS	\$2,085,173.45

**Spare parts will be charged at actual cost plus handling fee. This amount may be increased if necessary during each contract period. The \$165,000 will include the 10% handling fee.

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B.4 CONSIDERATION AND OBLIGATION--DELIVERY ORDERS
(JUN 1988) CLIN 001a,003,101a,103,201a,203,301a
303,401a,403 ONLY

- (a) The total estimated amount of this contract (ceiling) for CLINS 001a and 003 only is \$166,430.55. The Contracting Officer may unilaterally increase this amount as necessary for orders to be placed with the contractor during the contract period provided such orders are within any maximum ordering limitation prescribed under this contract.
- (b) The amount presently obligated with respect to the items listed above is \$166,430.55. The Contracting Officer may issue orders for work up to the amount presently obligated. This obligated amount may be unilaterally increased from time to time by the Contracting Officer by written modification to this contract. The obligated amount shall, at no time, exceed the contract ceiling as specified in paragraph a above. When and if the amount(s) paid and payable to the Contractor hereunder shall equal the obligated amount, the Contractor shall not be obligated to continue performance of the work unless and until the Contracting Officer shall increase the amount obligated with respect to this contract. Any work undertaken by the Contractor in excess of the obligated amount specified above is done so at the Contractor's sole risk.

[End of Clause]

B.5 CONSIDERATION AND OBLIGATION --FIRM FIXED PRICE
(JUN 1988)

The firm fixed price of this contract for Item 001 only is \$92,216.

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT**C.1 BACKGROUND**

The NRC Technical Training Center (TTC), located in Chattanooga, Tennessee, provides technical training to NRC personnel. Reactor training programs have involved full-scope reactor simulator training from their inception. Initially all simulator training was provided by contracting for time on industry simulators. Over the past several years, in order to ensure availability of adequate simulator training time and to allow integration of simulator training into classroom courses, the NRC has contracted to procure its own simulators. Five full-scope control room simulators replicating the Babcock & Wilcox (B&W), General Electric (GE), Combustion Engineering (CE) and Westinghouse reactor designs have been installed at TTC. The vendors and approximate original delivery dates for the simulators are as follows: B&W - Singer, 1980; GE Black Fox, BWR/6 - Singer, 1980; Westinghouse - Westinghouse, 1978; CE - Upgraded by ABB Combustion Engineering, 1992; GE Shoreham, BWR/4 - Singer, 1983.

During the life of this contract it is anticipated that the Westinghouse simulator will be replaced with another Westinghouse simulator. There will be a short period of overlap when both simulators will be maintained.

C.2 OBJECTIVE

The contractor shall provide technician-level maintenance support for the five full-scope, nuclear power plant simulators presently located at the TTC in Chattanooga, Tennessee, and any additional simulators which may be installed. Support will be required in the areas of preventive and corrective maintenance, spare parts purchase and accountability, vendor support, hardware modifications, and hardware configuration management control. Equipment maintained will include control panel hardware, video displays, input/output (I/O), and computer systems and their peripherals.

C.3 SCOPE OF WORK

The Contractor shall provide technician level hardware maintenance and support services, as specified below, for the five full-scope control room simulators presently located at the NRC Technical Training Center in Chattanooga, Tennessee, and any additional simulators which may be installed. The Contractor shall provide spare parts and consumables. All required tools and test equipment will be provided by the NRC or obtained through this contract. It is estimated that three full-time positions (excluding federal holidays) of technician effort will be required in each year of the contract.

C.3 (Continued)

C.3.1. The Contractor shall perform the routine hardware preventive maintenance for the TTC simulators during the principal period of maintenance. Preventive maintenance which impacts simulator availability for training shall be performed during periods when the simulators are not scheduled for training. Examples of preventive maintenance tasks include, but are not limited to:

- a. On at least a weekly basis, run simulator benchboard diagnostic tests and take any resultant required actions such as:
 - 1) Change lamps
 - 2) Install recorder paper, pens and ink cartridges
 - 3) Correct stuck recorder pens and meter needles
 - 4) Ultrasonically clean recorder pens
 - 5) Replace benchboard input/output (I/O) chips
- b. On a monthly basis, check voltages and adjust, repair or replace simulator benchboard power supplies
- c. On a monthly basis, clean the benchboard external surfaces and internal components
- d. Additional preventive maintenance identified by the simulator or hardware vendor or through operating experience with the simulators.

C.3.2. The Contractor shall perform required hardware corrective maintenance for the TTC simulators. Corrective maintenance will normally be performed during the principal period of maintenance except for failures affecting simulator availability for training. Examples of corrective maintenance tasks include, but are not limited to:

- a. Simulator benchboard hardware problem analysis and repair. Benchboard problems typically include the following types of faults:
 - 1) Power supply failure - repairs may include replacement of the component from spares or repair of the power supply
 - 2) Chip failure in the benchboard I/O chassis, particularly for lamps
 - 3) Annunciator system failures
 - 4) Broken wires
 - 5) Failed hand switches
 - 6) Failed recorder internal components, particularly servo motors
 - 7) Broken pins within connectors
 - 8) Failed video display terminals and Aydin display terminals

C.3 (Continued)

- 9) Additional hardware related problems identified by the simulator users and documented through the existing Simulator Action Request (SAR) procedures.

C.3.3. The Contractor shall provide routine preventive and corrective maintenance for the computer systems and their peripherals for the TTC simulators. The maintenance shall include diagnostic analysis, troubleshooting, alignment and calibration and repair. Simulator computer systems presently installed in TTC simulators include equipment from Encore Computer Corporation (32/55, 32/67, 32/87 and 32/97). NOTE: the Silicon Graphics computers are covered by a separate maintenance agreement.

C.3.4. The Contractor shall provide additional services related to the maintenance and support of the TTC simulators during the principal period of maintenance. Examples of additional services include, but are not limited to:

- a. Perform monthly/quarterly consumable inventories and ensure that sufficient supplies are available. Inventories shall be performed using forms approved by the NRC and shall be submitted to the NRC staff for review and retention. Typical items to be tracked include:
 - 1) Lamps
 - 2) Recorder paper, pens and ink cartridges
 - 3) Printer ribbons and paper
- b. Inventory and determine operability of the existing supply of spare parts for all simulators.
- c. Identify suppliers for repair work and replacement parts, including costs and turnaround time, and procure appropriate spare parts to assure availability of TTC simulators for training.
- d. Perform validation of simulator wire lists and identify and remove unused wiring.
- e. Identify spare simulator input/output (I/O) points
- f. Make modifications to simulator benchboards and install additional hardware such as switches, chart recorders, meters, and video display monitors into the existing simulator benchboards
- g. Install upgraded or replacement equipment to improve

C.3 (Continued)

the operability or reliability of the TTC simulators.

Examples of such equipment include, but are not limited to: I/O systems or components; computer systems and peripherals.

- C.3.5. The Contractor shall obtain and provide simulator spare and repair parts, tools and test equipment, and vendor assistance as necessary to support the operation of TTC simulators.
- a. The Contractor shall identify and provide vendor support for repair of TTC simulator hardware, when required, at cost plus an administrative fee.
 - b. Each order for parts or vendor support shall be submitted to the project officer on a standard form for review and approval prior to any order being placed.
 - c. The contractor shall make every effort to procure parts and vendor support at the lowest available price. This effort shall include identification of multiple suppliers for all orders, where possible. When multiple suppliers are not available, the reasons for selecting a single source shall be provided.
 - d. The contractor shall include any discount or rebate in the cost of the parts or services provided for the NRC.
 - e. For computer systems corrective maintenance requiring vendor support, the Contractor shall identify the appropriate vendor and arrange for vendor support. All such occurrences shall be approved by the Project Officer.
 - f. Each order for computer system vendor support shall be submitted to the project officer on a standard form for review and approval prior to any order being placed.
 - g. The Contractor shall maintain accurate records of all purchases such that the total cost of all parts and vendor support, and the balance of remaining funds can be determined. At no time shall the Contractor provide parts or vendor support which would incur costs exceeding the funds obligated.
 - h. The funding for parts and vendor support will be provided by NRC as a separate line item with a maximum

C.3 (Continued)

of \$165,000.00 per contract year. Funds will be obligated to this line item incrementally, as needed. Unused funds will be carried over into succeeding contract or option years.

C.3.6. Spare parts and supplies are maintained in close proximity to the appropriate simulator. Tools, test equipment and a workbench are maintained in a work room to which the contractor will be provided access. The NRC will also provide a desk, phone and personal computer for use by Contractor personnel in this workroom.

C.3.7. The NRC will provide Contractor personnel unescorted access to the TTC facilities in order to perform the work specified in the contract. On-site Contractor personnel will be provided an NRC contractor badge for access and identification.

C.3.8. The Contractor shall provide three full-time (excluding federal holidays) technician-level hardware maintenance support personnel for the TTC simulators as described in Paragraph C.1 above in each year of the contract.

C.3.9. The Contractor shall provide an option for one additional full-time (excluding federal holidays) technician-level hardware support person per year.

C.3.10. The Contractor shall designate one of the technicians as the on-site manager/lead technician. This individual will be the point of contact with the project officer for communications concerning the day-to-day implementation of the contract.

C.3.11. The Contractor shall designate a corporate contact who will be made available for resolution of technical items which cannot be resolved by the on-site manager/lead technician.

C.3.12. The On-Site Manager/lead technician shall be identified as key personnel. Any replacement personnel shall be subject to the approval of the NRC Project Officer.

C.3.13. RESERVED

C.3.14. The NRC simulators are heavily utilized during the normal day shift and are unavailable for routine preventive maintenance affecting simulator availability during this time. Therefore, to maximize the effectiveness of the maintenance support, the principal period of maintenance for this contract shall be nine consecutive hours between 8:00 a.m. and 8:00 p.m. Monday through Friday, excluding federal holidays.

C.3.15. Most corrective maintenance will be performed during the principal period of maintenance. Exceptions are failures

C.3 (Continued)

which either occur or continue outside the principal period of maintenance, and affect simulator availability for training when the simulator is actually scheduled for training. For these situations, the contractor shall provide a procedure for on-call or backup corrective maintenance. Maximum acceptable response time for on-call corrective maintenance shall be one hour from notification. Estimated occurrences of such on-call corrective maintenance are fifteen per year with an average of three hours per occurrence. Simulator training is scheduled for most day shifts (8:00 am - 4:00 pm), approximately 30% of evening shifts (4:00 pm - midnight) and occasionally on night shift (midnight - 8:00 am).

C.3.16. Outside principal period of maintenance (OPPM) work will be limited to Monday through Friday unless the failure affects simulator availability for a scheduled class. In such cases OPPM maintenance will be performed on the weekend at mutually acceptable times.

C.3.17. The Contractor shall provide a monthly report documenting major work activities, number of hours worked, spare or repair parts purchased and vendor support obtained. Copies of this report are to be provided to the Project Officer and Contract Administrator in accordance with Clause F.3.

C.3.18. The Contractor shall provide personnel with sufficient Bqualifications to perform the maintenance support described above. All technician(s) shall possess a combination of education/training and experience to demonstrate competence in the maintenance of full-scope power plant simulators as described below:

- a. Training and education related to the maintenance of full-scope simulator hardware and computer systems. Acceptable training includes technical or trade schools, military training and commercial training programs.
- b. A minimum of two years of work experience related to the maintenance of full-scope nuclear power plant simulator hardware.
- c. A minimum of four years of work experience demonstrating the ability to troubleshoot complex electronic equipment utilizing test gear such as oscilloscopes, multimeters and related equipment. The experience described in b. above can satisfy this requirement on a one for one basis.

C.3.19. At least one of the technicians shall have a minimum of two years of work experience related to the

C.3 (Continued)

maintenance, troubleshooting and repair of computer systems similar to those associated with the full scope nuclear power plant simulators located at the TTC.

C.4 DELIVERABLES

1. Technician level maintenance support for routine preventive maintenance for TTC simulators as described in C.3.1.
2. Technician level support for corrective maintenance for TTC simulators as described in C.3.2.
3. Technician level support for preventive and corrective maintenance for the computer systems of TTC simulators as described in C.3.3.
4. Technician level support for additional services for TTC simulators as described in C.3.4.
5. Simulator spare and replacement parts and consumables as described in C.3.5.
6. A monthly report documenting major work activities, number of hours worked, spare or repair parts purchased and vendor support obtained. Copies of this report are to be provided to the Project Officer and Contract Administrator.

[End of Clause]

SECTION D - PACKAGING AND MARKING

D.1 PACKAGING AND MARKING (MAR 1987)

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

[End of Clause]

SECTION E - INSPECTION AND ACCEPTANCE

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

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

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

NUMBER	TITLE	DATE
52.246-4	INSPECTION OF SERVICES - FIXED-PRICE	FEB 1992

[End of Clause]

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

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

[End of Clause]

SECTION F - DELIVERIES OR PERFORMANCE

F.1 NRCAR 2052.212-70 PREPARATION OF TECHNICAL REPORTS (JAN 1993)

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

[End of Clause]

F.2 NRCAR 2052.212-71 TECHNICAL PROGRESS REPORT

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

- (a) A listing of the efforts completed during the period, and milestones reached or, if missed, an explanation provided;
- (b) Any problems or delays encountered or anticipated and recommendations for resolution. If the recommended resolution involves a contract modification, e.g., change in work requirements, level of effort (cost) or schedule delay, the contractor shall submit a separate letter to the contracting officer identifying the required change and estimated cost impact.
- (c) A summary of progress to date; and
- (d) Plans for the next reporting period.

[End of Clause]

F.3 PLACE OF DELIVERY--REPORTS (JUN 1988)

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

F.3 (Continued)

(a) Project Officer (2 copies)

NRC Technical Training Center
Osborne Office Center
5700 Brainerd Road, Suite 200
Chattanooga, TN 37411-4017

(b) Contracting Officer (1 copy)

[End of Clause]

**F.4 MAINTENANCE REQUIREMENTS (ADP SYSTEM/EQUIPMENT)
(MAR 1987)**

- (a) Responsibilities of the Contractor. The Contractor shall provide maintenance (labor and parts) at the prices shown in this contract, and shall keep the equipment in good operating condition. Maintenance services shall not include electrical work external to the equipment, the furnishing of supplies, and adding or removing accessories, attachments or other devices. It shall not include repair of damage resulting from accident, transportation between Government sites, neglect, misuse, failure of electrical power or air-conditioning or humidity control, or causes other than ordinary use.
- (b) Responsibilities of the Government.
- (1) Government personnel shall not perform maintenance or attempt repairs to equipment while such equipment is under the purview of this contract unless agreed to by the Contractor.
 - (2) Subject to security regulations, the Government shall permit access to the equipment which is to be maintained.
 - (3) The Government shall provide adequate storage space for spare parts and adequate working space, including heat, light, ventilation, electrical current and outlets and telephones (for local calls only) for the use of maintenance personnel. These facilities shall be within the reasonable distance of the equipment to be serviced and shall be provided at no charge to the Contractor.
 - (4) The Government shall provide time for contractor sponsored equipment modifications within a reasonable time after being notified by the Contractor that the modification is ready to be made. The time required to make the modification shall be outside the normal preventive maintenance hours

F.4 (Continued)

- (5) The Government shall maintain site requirements in accordance with the equipment environmental specifications furnished by the Contractor.

[End of Clause]

F.5 DURATION OF CONTRACT PERIOD (MAR 1987)
ALTERNATE 3 (MAR 1987)

Although the Government contemplates use of the system(s) (hardware and software) for the system's life of 5 years from date of installation, the term of this contract is from date of contract award through 6 months, unless extended by exercise of options.

[End of Clause]

SECTION G - CONTRACT ADMINISTRATION DATA

G.1 NRCAR 2052.215-72 PROJECT OFFICER AUTHORITY
ALTERNATE 1 (JAN 1993)

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

Name: Steven K. Showe

Address: NRC Technical Training Center
5700 Brainerd Road
Suite 200
Chattanooga, TN 37411-4017

Telephone Number: (615)855-6500

- (b) The project officer shall:
- (1) Place delivery orders for items required under this contract.
 - (2) Monitor contractor performance and recommend to the contracting officer changes in requirements.
 - (3) Inspect and accept products/services provided under the contract.
 - (4) Review all contractor invoices/vouchers requesting payment for products/services provided under the contract and make recommendations for approval, disapproval, or suspension.
- (c) The project officer may not make changes to the express terms and conditions of this contract.

[End of Clause]

G.2 ORDERING PROCEDURES (MAY 1991)

- (a) In addition to the contracting officer, contract administrator, and project officer, the following individuals are authorized to issue delivery orders under this contract:

N/A

G.2 (Continued)

- (b) All delivery orders shall be prepared in accordance with FAR 16.506 and may be issued in writing, orally, or by written telecommunications.

[End of Clause]

SECTION H - SPECIAL CONTRACT REQUIREMENTS

H.1 NRCAR 2052.204-71 SITE ACCESS BADGE
REQUIREMENTS (JAN 1993)

During the life of this contract, the rights of ingress and egress for contractor personnel must be made available as required. In this regard, all contractor personnel whose duties under this contract require their presence on-site shall be clearly identifiable by a distinctive badge furnished by the Government. The Project Officer shall assist the contractor in obtaining the badges for the contractor personnel. It is the sole responsibility of the contractor to ensure that each employee has proper identification at all times. All prescribed identification must be immediately delivered to the Security Office for cancellation or disposition upon the termination of employment of any contractor personnel. Contractor personnel must have this identification in their possession during on-site performance under this contract. It is the contractor's duty to assure that contractor personnel enter only those work areas necessary for performance of contract work, and to assure the safeguarding of any Government records or data that contractor personnel may come into contact with.

[End of Clause]

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

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

James Bacon, Project Manager
Karen M. Bacon

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

- (b) If one or more of the key personnel, for whatever reason, becomes, or is expected to become, unavailable for work under this contract for a continuous period exceeding 30 work days, or is expected to devote substantially less effort to the work than indicated in the proposal or initially anticipated, the contractor shall immediately notify the contracting officer and shall, subject to the concurrence of the contracting

H.2 (Continued)

officer, promptly replace the personnel with personnel of at least substantially equal ability and qualifications.

- (c) Each request for approval of substitutions must be in writing and contain a detailed explanation of the circumstances necessitating the proposed substitutions. The request must also contain a complete resume for the proposed substitute and other information requested or needed by the contracting officer to evaluate the proposed substitution. The contracting officer or his/her authorized representative shall evaluate the request and promptly notify the contractor of his or her approval or disapproval in writing.
- (d) If the contracting officer determines that suitable and timely replacement of key personnel who have been reassigned, terminated, or have otherwise become unavailable for the contract work is not reasonably forthcoming, or that the resultant reduction of productive effort would be so substantial as to impair the successful completion of the contract or the service order, the contract may be terminated by the contracting officer for default or for the convenience of the Government, as appropriate. If the contracting officer finds the contractor at fault for the condition, the contract price or fixed fee may be equitably adjusted downward to compensate the Government for any resultant delay, loss, or damage.

[End of Clause]

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

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

[End of Clause]

H.4 ENGINEERING CHANGES (ADP REQUIREMENTS) (JUN 1988)

- (a) After contract award, the Government may solicit, and the Contractor is encouraged to propose independently, engineering changes to the equipment, software specifications or other requirements of this contract. These changes may be proposed to save money, to improve performance, to save energy, or to satisfy increased data processing requirements. However, if proposed changes relating to improved performance are necessary to meet increased data processing requirements of the user, those requirements shall not exceed the contract requirements by more than 25 percent. If the proposed changes are acceptable to both parties, the Contractor shall submit a

H.4 (Continued)

price change proposal to the Government for evaluation within 30 days of such acceptance. Those proposed engineering changes that are acceptable to the Government will be processed as modifications to the contract.

- (b) As a minimum, the following information shall be submitted by the Contractor with each proposal:
- (1) A description of the difference between the existing contract requirement and the proposed change, and the comparative advantages and disadvantages of each;
 - (2) Itemized requirements of the contract which must be changed if the proposal is adopted, and the proposed revision to the contract for each such change;
 - (3) An estimate of the changes in performance and cost, if any, that will result from adoption of the proposal;
 - (4) An evaluation of the effects the proposed change would have on collateral costs to the Government such as Government-furnished property costs, costs of related items, and costs of maintenance and operation; and
 - (5) A statement of the time by which the change order adopting the proposal must be issued so as to obtain the maximum benefits of the changes during the remainder of this contract, also, any effect on the contract completion time or delivery schedule shall be identified.
- (c) Engineering change proposals submitted to the Contracting Officer shall be processed expeditiously. The Government shall not be liable for proposal preparation costs or any delay in acting upon any proposal submitted pursuant to this clause. The Contractor has the right to withdraw, in whole or in part, any engineering change proposal not accepted by the Government within the period specified in the engineering change proposal. The decision of the Contracting Officer as to the acceptance of any such proposal under this contract shall be final and shall not be subject to the "Disputes" clause of this contract.
- (d) The Contracting Officer may accept any engineering change proposal submitted pursuant to this clause by giving the Contractor written notice thereof. This written notice may be given by issuance of a modification to this contract. The Contractor shall remain obligated to perform in accordance with the terms of the existing contract.
- (e) If an engineering change proposal submitted pursuant to this clause is accepted and applied to this contract, an equitable

H.4 (Continued)

adjustment in the contract price and in any other affected provisions of this contract shall be made in accordance with this clause and other applicable clauses of this contract. When the cost of performance of this contract is increased or decreased as a result of the change, the equitable adjustment increasing or decreasing the contract price shall be in accordance with the "Changes" clause rather than under this clause, but the resulting contract modification shall state that it is made pursuant to this clause.

- (f) The Contractor is requested to identify specifically any information contained in the engineering change proposal which it prefers not be disclosed to the public. The identification of information as confidential and/or proprietary is for information purposes only and shall not be binding on the Government to prevent disclosure of such information. The Contractor is advised that such information may be subject to release upon request pursuant to the Freedom of Information Act (5 U.S.C. 552).

[End of Clause]

H.5 GLOSSARY OF ADP TERMS (JUN 1988)

The definitions and explanations set forth in this glossary are an integral part of the terms and conditions of this contract.

- (a) Data Processing Equipment System and/or Subsystem. The complement of individual machines and operating software furnished by the Contractor and acquired to operate as an integrated group.
- (b) Equipment. An all inclusive term which refers either to an individual machine or to the total complement of machines required to operate as an integrated group.
- (c) Equipment and/or Operating Software Failure. A malfunction in the contractor-supplied equipment and/or operating software, excluding all external factors, which prevents the accomplishment of the job.
- (d) Installation Date. The date by which the Contractor must have the ordered equipment ready for use by the Government.
- (e) Machine. An individual unit, including features installed thereon, of a data processing system, or subsystem, identified by a type and/or model number, such as a central processing unit, additional memory module, a tape unit, a card reader, etc.
- (f) Mechanical Replacement. The replacement of one machine for

H.5 (Continued)

another occasioned by the mechanical condition of the equipment being replaced.

- (g) Operating Software. Those routines that interface directly with hardware (including peripheral devices), the computer operations, applications and utility programs.
- (h) Operational Use Time. The time during which equipment is in actual operation, exclusive of idle time, standby time, or maintenance time due to machine failure; not synonymous with "power-off" time.
- (i) Preventive Maintenance. That maintenance performed by the Contractor which is designed to keep the equipment in proper operating condition. It is performed on a scheduled basis.
- (j) Principal Period of Maintenance. Any 9 consecutive hours per day, including an official meal period not to exceed 1 hour per day, between the hours of 12:00 p.m. and 9:00 p.m., Monday through Friday, excluding holidays observed at the NRC installation.
- (k) Extended Maintenance Period Option. Option to require maintenance service during any extension of the Principal Period of Maintenance at a fixed price for such period, regardless of the number of calls requested during such period.
- (l) Remedial Maintenance. That maintenance performed by the Contractor which results from Contractor supplied equipment or operating software failure. It is performed as required and is therefore on an unscheduled basis.
- (m) Total Monthly Charges.
 - (1) Rental. All monthly charges for the use (rental) of equipment and software and for maintenance thereof.
 - (2) Maintenance of Government-owned. All monthly charges for the maintenance of equipment and software supplied under this contract.
- (n) Alteration. An alteration is defined as any change to a machine which deviates from the physical, mechanical, or electrical machine design (including microcode), whether or not additional devices or parts are required.
- (o) Attachment. An attachment is defined as the mechanical, electrical, or electronic interconnection of equipment manufactured by other than the original equipment manufacturer and connected to the machine or system.

H.5 (Continued)

[End of Clause]

H.6 FIPS PUBS AND STANDARDS COMPLIANCE (MAR 1987)

In no case shall the Contractor or any subcontractor take any action or use any replacement parts that would result in equipment that is not in compliance with applicable FIPS PUBS and Standards (See Section J for List of Attachments) without written approval of the Contracting Officer. There are no applicable FIPS PUBS for this procurement.

[End of Clause]

PART II - CONTRACT CLAUSES

SECTION I - CONTRACT CLAUSES

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

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

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

NUMBER	TITLE	DATE
52.202-1	DEFINITIONS	SEP 1991
52.203-1	OFFICIALS NOT TO BENEFIT	APR 1984
52.203-3	GRATUITIES	APR 1984
52.203-5	COVENANT AGAINST CONTINGENT FEES	APR 1984
52.203-7	ANTI-KICKBACK PROCEDURES	OCT 1988
52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY	SEP 1990
52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS	JAN 1990
52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	NOV 1992
52.215-1	EXAMINATION OF RECORDS BY COMPTROLLER GENERAL	FEB 1993
52.215-2	AUDIT - NEGOTIATION	FEB 1993
52.215-22	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA	JAN 1991
52.215-24	SUBCONTRACTOR COST OR PRICING DATA	DEC 1991
52.215-26	INTEGRITY OF UNIT PRICES	APR 1991
52.215-27	TERMINATION OF DEFINED BENEFIT PENSION PLANS	SEP 1989
52.215-33	ORDER OF PRECEDENCE	JAN 1986
52.215-39	REVERSION OR ADJUSTMENT OF PLANS FOR POSTRETIREMENT BENEFITS OTHER THAN PENSIONS (PRB)	JUL 1991
52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL DISADVANTAGED BUSINESS CONCERNS	FEB 1990
52.219-13	UTILIZATION OF WOMEN-OWNED SMALL BUSINESSES	AUG 1986

I.1 (Continued)

NUMBER	TITLE	DATE
52.220-3	UTILIZATION OF LABOR SURPLUS AREA CONCERNS	APR 1984
52.222-3	CONVICT LABOR	APR 1984
52.222-26	EQUAL OPPORTUNITY	APR 1984
52.222-28	EQUAL OPPORTUNITY PREAMWARD CLEARANCE OF SUBCONTRACTS	APR 1984
52.222-35	AFFIRMATIVE ACTION FOR SPECIAL DISABLED AND VIETNAM ERA VETERANS	APR 1984
52.222-36	AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS	APR 1984
52.222-37	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA	JAN 1988
52.223-2	CLEAN AIR AND WATER	APR 1984
52.223-6	DRUG-FREE WORKPLACE	JUL 1990
52.225-11	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES	MAY 1992
52.227-1	AUTHORIZATION AND CONSENT	APR 1984
52.229-3	FEDERAL, STATE, AND LOCAL TAXES	JAN 1991
52.229-5	TAXES - CONTRACTS PERFORMED IN U.S. POSSESSIONS OR PUERTO RICO	APR 1984
52.232-1	PAYMENTS	APR 1984
52.232-8	DISCOUNTS FOR PROMPT PAYMENT	APR 1989
52.232-17	INTEREST	JAN 1991
52.232-23	ASSIGNMENT OF CLAIMS	JAN 1986
52.232-25	PROMPT PAYMENT	SEP 1992
52.232-28	ELECTRONIC FUNDS TRANSFER PAYMENT METHODS	APR 1989
52.233-1	DISPUTES	DEC 1991
52.233-3	PROTEST AFTER AWARD	AUG 1989
52.242-13	BANKRUPTCY	APR 1991
52.243-1	CHANGES - FIXED-PRICE	AUG 1987
52.244-1	SUBCONTRACTS (FIXED-PRICE CONTRACTS)	APR 1991
52.244-5	COMPETITION IN SUBCONTRACTING	APR 1984
52.246-25	LIMITATION OF LIABILITY - SERVICES	APR 1984
52.248-1	VALUE ENGINEERING	MAR 1989
52.249-2	TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE)	APR 1984
52.249-8	DEFAULT (FIXED-PRICE SUPPLY AND SERVICE)	APR 1984
52.251-1	GOVERNMENT SUPPLY SOURCES	APR 1984
52.253-1	COMPUTER GENERATED FORMS	JAN 1991

[End of Clause]

I.1 (Continued)

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

- (a) Definitions. The definitions set forth in FAR 3.104-4 are hereby incorporated in this clause.
- (b) The Contractor agrees that it will execute the certification set forth in paragraph (c) of this clause when requested by the Contracting Officer in connection with the execution of any modification of this contract.
- (c) Certification. As required in paragraph (b) of this clause, the officer or employee responsible for the modification proposal shall execute the following certification:

CERTIFICATE OF PROCUREMENT INTEGRITY--
MODIFICATION (NOV 1990)

(1) I, [Name of certifier] _____, am the officer or employee responsible for the preparation of this modification proposal and hereby certify that, to the best of my knowledge and belief, with the exception of any information described in this certification, I have no information concerning a violation or possible violation of subsection 27(a), (b), (d), or (f) of the Office of Federal Procurement Policy Act, as amended* (41 U.S.C. 42), (hereinafter referred to as "the Act"), as implemented in the FAR, occurring during the conduct of this procurement (contract and modification number).

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

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

I.2 (Continued)

NONE EXISTS)

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

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

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

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

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

[End of Clause]

I.3 52.216-18 ORDERING (APR 1984)

- (a) Any supplies and services to be furnished under this contract shall be ordered by issuance of delivery orders by the individuals or activities designated in the Schedule. Such orders may be issued from June 1, 1994 through the expiration date of the contract..
- (b) All delivery orders are subject to the terms and conditions of this contract. In the event of conflict between a delivery order and this contract, the contract shall control.
- (c) If mailed, a delivery order is considered "issued" when the Government deposits the order in the mail. Orders may be issued orally or by written telecommunications only if authorized in the Schedule.

[End of Clause]

I.4 52.216-19 DELIVERY-ORDER LIMITATIONS (APR 1984)

- (a) Minimum order. When the Government requires supplies or services covered by this contract in an amount of less than \$100.00, the Government is not obligated to purchase, nor is the Contractor obligated to furnish, those supplies or services under the contract.
- (b) Maximum order. The Contractor is not obligated to honor--
 - (1) Any order for a single item in excess of N/A;
 - (2) Any order for a combination of items in excess of N/A; or
 - (3) A series of orders from the same ordering office within N/A days that together call for quantities exceeding the limitation in subparagraph (1) or (2) above.
- (c) If this is a requirements contract (i.e., includes the Requirements clause at subsection 52.216-21 of the Federal Acquisition Regulation (FAR)), the Government is not required to order a part of any one requirement from the Contractor if that requirement exceeds the maximum-order limitations in paragraph (b) above.
- (d) Notwithstanding paragraphs (b) and (c) above, the Contractor shall honor any order exceeding the maximum order limitations in paragraph (b), unless that order (or orders) is returned to the ordering office within N/A days after issuance, with written notice stating the Contractor's intent not to ship the item (or items) called for and the reasons. Upon receiving this notice, the Government may acquire the supplies or services from another source.

I.4 (Continued)

[End of Clause]

I.5 52.216-22 INDEFINITE QUANTITY (APR 1984)

- (a) This is an indefinite-quantity contract for the supplies or services specified, and effective for the period stated, in the Schedule. The quantities of supplies and services specified in the Schedule are estimates only and are not purchased by this contract.
- (b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the supplies or services specified in the Schedule up to and including the quantity designated in the Schedule as the "maximum." The Government shall order at least the quantity of supplies or services designated in the Schedule as the "minimum."
- (c) Except for any limitations on quantities in the Delivery-Order Limitations clause or in the Schedule, there is no limit on the number of orders that may be issued. The Government may issue orders requiring delivery to multiple destinations or performance at multiple locations.
- (d) Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period; provided, that the Contractor shall not be required to make any deliveries under this contract after expiration date of the contract..

[End of Clause]

I.6 52.217-7 OPTION FOR INCREASED QUANTITY--SEPARATELY PRICED
LINE ITEM (MAR 1989)

The Government may require the delivery of the numbered line item, identified in the Schedule as an option item, in the quantity and at the price stated in the Schedule. The Contracting Officer may exercise the option by written notice to the Contractor within 60 days. Delivery of added items shall continue at the same rate that like items are called for under the contract, unless the parties otherwise agree.

[End of Clause]

I.7 52.217-9 OPTION TO EXTEND THE TERM OF THE
CONTRACT (MAR 1989)

- (a) The Government may extend the term of this contract by written notice to the Contractor within 60 days; provided, that the Government shall give the Contractor a preliminary written notice of its intent to extend at least 60 days before the contract expires. The preliminary notice does not commit the Government to an extension.
- (b) If the Government exercises this option, the extended contract shall be considered to include this option provision.
- (c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed 5 years.

[End of Clause]

I.8 201-39.5202-3 PROCUREMENT AUTHORITY (OCT 1990 FIRMR)

This acquisition is being conducted under the regulatory blanket delegation of GSA's exclusive procurement authority for FIP resources.

PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

SECTION J - LIST OF ATTACHMENTS

J.1 ATTACHMENTS (MAR 1987)

<u>Attachment Number</u>	<u>Title</u>
1	Billing Instructions
2	NRC Handbook 3.8
3	NRC TECHNICAL TRAINING CENTER PROCEDURES TTC-01
4	Simulator Hardware List

12/17/91

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/INVOICES AS IMPROPER.

Form: Claims shall be submitted on the payee's letterhead, voucher/invoices, 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 US Government Printing Office, 710 North Capitol Street, Washington, DC 20401.

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:

US Nuclear Regulatory Commission
Division of Contracts and Property Management
Contract Administration Branch, P-902
Washington, DC 20555

HAND-DELIVERY OF VOUCHERS/INVOICES IS DISCOURAGED AND WILL NOT EXPEDITE PROCESSING BY THE NRC. However, should you choose to deliver vouchers/invoices by hand, including delivery by any express mail service or special delivery service which uses a courier or other person to deliver the vouchers/invoices 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.

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

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

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

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

Frequency: The contractor shall submit a voucher or invoice only after the 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 mail stop 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 which 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. Attached 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 US dollars authorized in the contract.

Supersession: These instructions supersede any previous billing instructions.

12/17/91

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/INVOICES AS IMPROPER.

Form: Claims shall be submitted on the payee's letterhead, voucher/invoices, 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 US Government Printing Office, 710 North Capitol Street, Washington, DC 20401.

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:

US Nuclear Regulatory Commission
Division of Contracts and Property Management
Contract Administration Branch, P-902
Washington, DC 20555

HAND-DELIVERY OF VOUCHERS/INVOICES IS DISCOURAGED AND WILL NOT EXPEDITE PROCESSING BY THE NRC. However, should you choose to deliver vouchers/invoices by hand, including delivery by any express mail service or special delivery service which uses a courier or other person to deliver the vouchers/invoices 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.

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

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

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

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

Frequency: The contractor shall submit a voucher or invoice only after the 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 mail stop 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 which 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. Attached 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 US dollars authorized in the contract.

Supersession: These instructions supersede any previous billing instructions.

**Unclassified Contractor and
Grantee Publications in the
NUREG Series**

Directive

(Formerly
MC 3202) **3.8**

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Unclassified Contractor and Grantee Publications in the NUREG Series Directive 3.8

Policy

(3.8-01)

This directive and handbook govern the publishing of (1) unclassified NRC contractor, consultant or grantee formal reports, books, and international agreement reports, in the NUREG/CR, NUREG/GR, and NUREG/IA series; (2) reports and books by contractors of the U.S. Department of Energy (DOE); and (3) publications prepared for NRC under memoranda of understanding and interagency agreements.

Objectives

(3.8-02)

- To ensure the production and dissemination of information and publications as required by the Energy Reorganization Act of 1974 and the Freedom of Information Act. (a)
- To ensure the technical and management reviews of formal reports and books prior to publication. (b)
- To ensure that national security, patent rights, copyrights, proprietary rights, and rights in other sensitive unclassified information, including those specified in interagency and international agreements and memoranda of understanding, are not compromised by the release or publication of information by NRC. (c)
- To ensure that all unclassified NRC contractor or grantee publications in the NUREG series carry the registered Government identification NUREG/CR-0000, NUREG/GR-0000, or NUREG/IA-0000, with the exception of some publications

**Unclassified Contractor and Grantee
Publications in the NUREG Series
Part 1 - Publications, Mail, and Information Disclosure
Directive 3.8**

Objectives

(3.8-02) (continued)

- prepared by grantees, and indicate the availability of source material used in these publications. (d)
- To ensure that NRC-sponsored book manuscripts receive proper peer review from experts within and outside NRC. (e)
 - To provide uniform procedures for publishing formal reports and books prepared by NRC contractors or grantees. (f)

Organizational Responsibilities and Delegations of Authority

(3.8-03)

Executive Director for Operations (EDO) (031)

Delegates to the Deputy Executive Directors for Operation decisionmaking authority for the resolution of differences between NRC and contractors about the contents of publications, about granting contractors permission to publish NRC-sponsored information in the open literature, and about permitting contractors to issue press or other media releases concerning NRC-sponsored information.

Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations and Research (032)

As delegated from the EDO, makes final decisions in the following areas for the Office of Nuclear Reactor Regulation, Office of Nuclear Regulatory Research, and Regional Offices:

- When an Office Director refuses to publish an NRC-sponsored document because of irreconcilable differences between themselves and the author(s) about the contents of the document. (a)
 - When an Office Director refuses to permit a contractor's principal investigator to publish NRC-sponsored information in the open literature. (b)
-
-

**Deputy Executive Director for
Nuclear Reactor Regulation,
Regional Operations and Research**
(032) (continued)

- When an Office Director refuses to permit a contractor to issue a press or other media release about an NRC-sponsored publication. (c)

**Deputy Executive Director for
Nuclear Materials Safety, Safeguards,
and Operations Support**
(033)

As delegated from the EDO, makes final decisions in the following areas for the offices reporting to this official:

- When an Office Director refuses to publish an NRC-sponsored document because of irreconcilable differences between themselves and the author(s) about the contents of the document. (a)
- When an Office Director refuses to permit a contractor's principal investigator to publish NRC-sponsored information in the open literature. (b)
- When an Office Director refuses to permit a contractor to issue a press or other media release about an NRC-sponsored publication. (c)

Directors of Offices
(034)

- Ensure that publications will be reviewed in draft prior to final printing and distribution for acceptability by determining that they are consistent with agency policy, management decisions, and that they raise no significant legal issues. (a)
- Ensure that statements of work include statements requiring contractor* compliance with this directive and handbook and Government Printing and Binding Regulations. (b)

*"Contract" in this context encompasses the "Standard Order for DOE Work" (NRC Form 173), interagency and international agreements, and grants.

**Unclassified Contractor and Grantee
Publications in the NUREG Series
Part 1 - Publications, Mail, and Information Disclosure
Directive 3.8**

**Directors of Offices
(034) (continued)**

- Sign, or delegate signature authority for, the NRC Form 426A, "Release to Publish Unclassified NRC Contractor, Consultant, or Conference Proceedings Reports," and for memoranda requesting reprints of contractor publications. (c)

**Director, Office of Administration (ADM)
(035)**

As delegated from the Deputy Executive Director for Nuclear Materials Safety, Safeguards, and Operations Support, administers NRC's programs and policies for publishing unclassified contractor and grantee reports and books in the NUREG series.

**Director, Division of Freedom of
Information and Publications
Services, ADM
(036)**

- Develops and administers, as delegated from the Director, ADM, NRC's program and policies for publishing unclassified contractor, consultant, and grantee formal reports, books, and international agreement reports in the NUREG/CR, NUREG/GR, and NUREG/IA series. (a)
- Applies the policy, procedures, standards, and guides for the documentation, formatting, composition, printing, and dissemination of NRC-sponsored publications in the NUREG series consistent with the mission of the agency and in accordance with the requirements of the Government Printing and Binding Regulations issued by the Joint Committee on Printing, U.S. Congress. (b)
- Develops and administers the central agency publication numbering system for identifying, producing, and retrieving unclassified NRC-sponsored publications in the NUREG series. (c)

**Director, Division of Contracts and
Property Management, ADM
(037)**

Ensures that those requests for proposals, invitations for bids, and grant proposals, and the ensuring contracts and grants that require

**Director, Division of Contracts and
Property Management, ADM**
(037) (continued)

publications as deliverables, include provisions requiring contractor compliance with this directive and handbook and Government Printing and Binding Regulations.

Applicability

(3.8-04)

Employees

(041)

This directive and handbook apply to and must be followed by all NRC employees.

Other Publications

(042)

The provisions of this directive and handbook do not apply to NRC staff publications in the NUREG series, NRC docket material, or documents created by NRC boards, panels, advisory committees, and offices that report to the Commission.

Handbook

(3.8-05)

Detailed guidelines for the preparation of publications are contained in Handbook 3.8.

References

(3.8-06)

1. Executive Order 12291—Federal Regulation, February 17, 1981.
2. Title 17, U.S. Code, Copyrights.
3. Government Printing and Binding Regulations, S. Pub. 101-9, February 1990.

Unclassified Contractor and Grantee
Publications in the NUREG Series
Part 1 - Publications, Mail, and Information Disclosure
Directive 3.8

References

(3.8-06) (continued)

4. DOE-NRC Memorandum of Understanding, February 24, 1978.
5. Title 44, U.S. Code, "Public Printing and Documents," Chapter 3, Government Printing Office.
6. U.S. Government Printing Office *Style Manual*, 1984.
7. Energy Reorganization Act of 1974 (42 U.S.C. 5801, et seq.).
8. The Freedom of Information Act (5 U.S.C. 522).
9. Public Law 95-224, The Federal Grant and Cooperative Agreement Act, February 3, 1978.
10. Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations, OMB Circular A-110, July 1976.
11. Cost Principles for State and Local Governments, OMB Circular A-87, January 1981.
12. NUREG-0650, Revision 1, "Publishing Documents in the NUREG Series," November 1990.

Unclassified Contractor and Grantee Publications in the NUREG Series

Handbook

(Formerly
Appendix 3202) **3.8**

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Introduction

This handbook specifies the procedures necessary for Nuclear Regulatory Commission (NRC) contractors and grantees to follow when preparing the following kinds of publications for the NRC.

- Final NUREG Reports
- International Agreement Reports
- Books
- Grant Publications

The handbook is divided into five major parts and includes a glossary and exhibits. Part I provides general information for staff consideration in the preparation of statements of work. Parts II, III, IV, and V provide publishing guidelines specific to, respectively, contractor reports, international agreement reports, books, and grantee publications.

Contractor means a private contractor, consultant, expert, another State or Federal agency working under an interagency agreement, or a DOE facility or subcontractor, such as the National Laboratories, working under the DOE/NRC Memorandum of Understanding of February 24, 1978, and any subcontractors of these organizations.

This directive and handbook, as well as a copy of "Publishing Documents in the NUREG Series" (NUREG-0650, Revision 1), must be included or referenced in all contracts, interagency and international agreements, and grants for which the publications listed above are contract deliverables or grant obligations. In addition to the guidelines specific to each type of publication that appear in subsequent parts of this handbook, all statements of work must contain the applicable guidelines outlined in Part I.

Part I

Preparing Publication Requirements for Statements of Work for Contracts

Specifying Publication Requirements (A)

List and describe the type of technical reports required from each project, task or subtask, as applicable. State when, how many, and to whom they should be submitted and the scope of information they should contain. These reports may be unclassified, sensitive unclassified, or classified. For guidelines and requirements covering sensitive unclassified and classified publications, refer to NRC Management Directive 12.2, NRC Information Security Program (formerly MC 2101).

This directive and handbook pertain to publications that will be issued in the NUREG/CR, NUREG/IA, and NUREG/GR series.

Publishing Formal Reports (B)

NUREG series reports will be printed and distributed by NRC from camera-ready copy submitted by the contractor to the Regulatory Publications Branch, MS P-223, U.S. Nuclear Regulatory Commission, Washington, DC 20555. The camera-ready copy is to be prepared in accordance with the provisions of this handbook. Recommended guidelines for the organization and format of formal reports are specified in "Publishing Documents in the NUREG Series" (NUREG-0650, Revision 1).

When the report contains sensitive unclassified or classified information, the contractor must comply with Management Directive 12.2, NRC Information Security Program (formerly MC 2101).

Publishing Formal Reports (B) (continued)

If a draft is desired prior to completion of a final report, specify in the statement of work (SOW) the due date for delivering the final camera-ready copy after receiving NRC or participant comments (if applicable) on the draft. State that all draft material be submitted to the cognizant NRC contact.

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 or participant comments (if applicable), the contractor will be asked to make changes. If agreement on the changes is reached, the NRC contact will authorize the contractor to prepare the final copy and submit it to the NRC contact, if it is a letter report or input to a Safety Evaluation Report or an Environmental Statement, or to the Director, Division of Freedom of Information and Publications Services (DFIPS), if it is a camera-ready copy for printing and distribution. This is to be done to ensure proper publication, handling, distribution and, among other things, to preclude further changes that might nullify the agreement.

If special caveats were agreed to between the contractor and the NRC contact, the caveats should accompany Form 426A (Exhibit 1) for approval when it is sent to the NRC contact. A copy of special caveats should also accompany the camera-ready copy sent to DFIPS.

If agreement on changes to a formal technical report to be issued in the NUREG/CR series is not reached, the NRC contact may request the contractor to prepare the camera-ready copy with, in addition to the standard disclaimer required on all contractor formal reports (see Section II.F. below), any caveats deemed necessary to cover NRC objections. Such caveats may range from "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.

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 entered into the contract should similarly be informed by the NRC contracting officer. The contractor is then free to publish the report without NRC

Publishing Formal Reports (B) (continued)

being identified as the funding sponsor of the report and without the NRC disclaimer. Office Director or designee decisions may be appealed to the appropriate Deputy Executive Director for Operations.

Publishing Unclassified Information in Open Literature and Presenting Papers (C)

Specify whether the contractor's principal investigator is permitted to publish in the **open literature** instead of submitting a final report and/or to present papers at public or association meetings during the course of the work. If that arrangement is authorized, add the following statement to the Statement of Work (SOW):

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 NRC contact wants to review the paper or journal article prior to presentation or submission for publication, state so in the SOW, 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 contact in draft form and agreement has been reached on the content.

If the agreement is not reached, NRC may also require 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 may 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. The contractor is then free to publish without NRC being identified as the funding sponsor of the information. Office Director

Publishing Unclassified Information in Open Literature and Presenting Papers (C) (continued)

or designee decisions may be appealed to the appropriate NRC Deputy 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. The NRC shall take one of the following actions: approve the material as submitted, approve it subject to NRC-suggested revisions, or disapprove it. In any event, the NRC may disapprove or delay presentation of papers on information that is subject to Commission approval that has not been ruled upon or which has been disapproved.

If the contractor requests permission to publish in the open literature even though the contract does not explicitly provide for this type of publication, the contract can be modified to provide for such presentations.

When the contractor submits journal articles for publication, each must be accompanied by the following statement:

The submitted manuscript has been authored by a contractor of the U.S. Government under Contract* No. _____. Accordingly, the U.S. Government has a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or allow others to do so, for U.S. Government purposes.

All published papers and articles must include the following disclaimer:

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 views expressed in this paper are not necessarily those of the U.S. Nuclear Regulatory Commission.

*For DOE work orders the appropriate FIN number is applicable.

Publishing Unclassified Information in Open Literature and Presenting Papers (C) (continued)

Should the contractor be requested by the journal or other publisher to transfer the copyright, the contract author will respond to the journal or other publisher in writing in accord with the sample letter shown as follows:

Dear (Copyright Holder's Name):

We recently received a document for signature assigning copyright and republication rights in the submitted article (title) to (name of publication). This letter is offered in lieu of the document as a means of completing the transfer of ownership. Accordingly, we hereby expressly transfer and assign our rights of ownership in the above-cited work to (name of publisher).

You are advised, however, that the above assignment and any publication or republication of the above-cited work is subject to the following Government rights:

The submitted manuscript has been authored by a contractor of the U.S. Government under Contract No. _____. Accordingly, the U.S. Government has a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or allow others to do so, for U.S. Government purposes.

Sincerely,

If NRC approves open literature publication and page charges and travel costs are required for the presentation of papers, see Management Directive 3.10, NRC Contractor Unclassified Papers, Journal Articles, and Press or Other Media Releases on Regulatory and Technical Subjects (formerly MC 3206).

Reports Containing Sensitive Unclassified and Classified Information (D)

Examples of the proper marking of reports designated Official Use Only, Limited Official Use, Proprietary Information, Safeguards

Reports Containing Sensitive Unclassified and Classified Information (D) (continued)

Information, and Classified (Confidential, Secret, and Top Secret) are provided in Management Directive 12.2, NRC Information Security Program (formerly MC 2101).

Conference and Workshop Proceedings (E)

If NRC approves publication of compilations of papers presented at NRC-sponsored or cosponsored meetings, conferences, and symposia, see Management Directive 3.11, Conferences and Conference Proceedings (formerly MC 3207).

Distribution of Reports to Contractors (F)

Up to 50 copies of printed unclassified NUREG/CR, NUREG/GR, and NUREG/IA reports will be bulk shipped to the contractor by NRC. (Joint Committee on Printing's *Government Printing and Binding Regulations* permit contractors to receive up to 50 copies of reports they have produced for NRC free of charge.) If fewer than 50 copies are needed, indicate the desired quantity on NRC Form 426A (Exhibit 1). Contractors requesting single copies for specific individuals in organizations other than the contractor's organization who are not included in the distribution requested by the NRC contact may address such request(s), with written justification, to the NRC contact. If the additional distribution is approved by the NRC contact, the contractor shall send address labels with the camera-ready copy to the Regulatory Publications Branch, DFIPS, USNRC, Washington, DC 20555, and that distribution will be made along with the standard distribution.

Coordinating Contractor Press or Other Media Releases of Information (G)

A contractor may request permission to issue a press or other media release on the work being done. That request must be made to the NRC Office Director or designee, who will consult with the Public Affairs staff. The contractor must not issue a press release on nonroutine information without this prior approval. This approval may be obtained by a telephone call to the Office Director or designee to expedite the request. The contractor may appeal decisions not to authorize the release of information or delays in handling the request to the appropriate Deputy Executive Director for Operations.

Part II

Draft and Final NUREG Reports

Identification Information (A)

NUREG Number (1)

Each contractor report published by NRC must be identified by a unique alphanumeric designation controlled and maintained by the Division of Freedom of Information and Publications Services (DFIPS). To obtain an NRC report number, call the Regulatory Publications Branch, DFIPS, at FTS 49-27001 or (301)49-27001.

The NRC identification numbers will have one of the following forms:

- NUREG/CR-0000
- NUREG/GR-0000
- NUREG/IA-0000

where CR indicates **contractor report**, GR indicates **grant report**, and IA indicates **international agreement report**. The contractor report number, if any, will be placed below the NUREG number on the title page and cover.

When a report consists of more than one volume or binding or is issued in more than one edition, an appropriate volume, number, supplement, part, addendum, or revision designation must appear immediately below the NRC report number and the contractor's report number, if any.

Author Names (2)

Authors' names routinely appear on the report cover and title page, unless doing so is impractical, as for an annual report having many contributors. Editors or compilers with subject-area expertise may also be identified as such on the cover and title page. Author

Identification Information (A) (continued)

Author Names (2) (continued)

affiliations need not be listed unless the affiliation differs from the organization creating the report.

Organizational Identification (3)

The Regulatory Publications Branch, DFIPS, prepares the covers and title pages for all reports and will list information about the organization that created the report as it is provided.

Previous Reports in Series (4)

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.

Report Dates (5)

The report dates are shown on the title page. These dates include the month and year the report is completed, and the month and year it is published.

Report Organization and Components (B)

The organization and components of contractor reports vary somewhat, depending on their purpose and scope. Recommended format and organizational guidelines appear in "Publishing Documents in the NUREG Series" (NUREG-0650, Revision 1).

Each draft and final report prepared for NRC must include an abstract of 200 words or less that appears on a separate page preceding the table of contents. The abstract must also appear on the Bibliographic Data Sheet, NRC Form 335 (Exhibit 2A). The back of Form 335 contains instructions for completing the form (Exhibit 2B). Guidelines on the special writing requirements for preparing abstracts appears in Section 5.5 of NUREG-0650, Revision 1.

Pre-Publication Reviews (C)

Patent Review (1)

Patent implications must 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 National Laboratories), that Government agency should be requested by the contractor to perform the patent review. The result of the review must be reported on NRC Form 426A under item 8 (Exhibit 1).

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 must be consulted, and the responsible NRC technical contact 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 that may be of an inventive nature, mark "N/A" on the NRC Form 426A 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 Assistant General Counsel for Administration, Office of the General Counsel, on FTS 49-21553 or (301)49-21553.

Security Review (2)

Should a report of sensitive unclassified or classified work be required, the NRC contact must work with the NRC Division of Security to establish the appropriate procedures and inform the contractor of these procedures through the contracting officer. The standards for marking and handling these reports are given in Management Directive 12.2, NRC Information Security Program (formerly MC 2101).

Copyright Review (3)

Copyrighted material must not appear in NRC-sponsored publications without written permission from the copyright holder. See NUREG-0650, Revision 1, Section 3.4, for information about obtaining copyright permission.

Color Printing (D)

Regulations issued by the Joint Committee on Printing (JCP) restrict the use of color in printed materials to those uses that are of demonstrable value. JCP regulations specify that "Demonstrably valuable multicolor printing..." includes the following categories:

- Maps and technical diagrams where additional color is necessary for clarity. (a)
- Object identification (medical specimens, diseases, plants, flags, uniforms, etc.). (b)
- Safety programs, fire prevention, savings bonds programs, and competitive areas of personnel recruiting. (c)
- Areas wherein clearly identifiable savings in costs can be soundly predicated on multicolor use. (d)
- Printing for programs required by law, whose relative success or failure is in direct ratio to the degree of public response, and where that response can be logically attributable to the number of colors planned and the manner in which they are proposed to be used. (e)
- Color for promotional or motivational purposes such as programs concerning public health, safety, consumer benefits; or to encourage utilization of Government facilities such as programs for Social Security, Medicare, and certain areas of need for veterans would come within this category. (f)

The regulations indicate that the following categories do not meet the "demonstrable value" criteria.

- Printed items wherein additional color is used primarily for decorative effect. (a)
- Printed items where additional color is used primarily in lieu of effective layout and design. (b)
- Printed items where additional color is used excessively, i.e., four colors when two or three will fulfill the need; three colors when two are adequate; two colors when one is adequate. (c)
- Printed items wherein the inclusion of multicolor does not reflect careful, competent advanced planning which recognizes the contribution that the use of color is expected to make to the ultimate end-purpose. (d)

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Color Printing (D) (continued)

If color printing is anticipated when the statement of work or Standard Order for DOE work is being prepared, contact the Regulatory Publications Branch, DFIPS. Prior approval must be granted by the Director of DFIPS. If a requirement for color printing arises as the report is being prepared, submit a written justification for its use to the Director of DFIPS.

Microfiche (E)

NRC contractors and DOE Laboratories submitting microfiche with reports must submit a hard copy of each microfiche, include headers on each microfiche, as shown in Exhibit 3, and conform to the following NRC specifications.*

1. Microfiche must conform to either the 24/98 format for source documents with 14 columns and 7 rows (reduction ratio of 1:24) or the 48/270 format for computer output microfilm with 18 columns and 15 rows (reduction ratio of 1:48).
2. The microfiche sheet must be standard 105 mm x 148 mm.
3. The microfiche must be either a silver-halide master or a black or blue-black diazo placed in acid free envelopes.
4. The microfiche must contain headers as shown in the sample in Exhibit 3. Specifically, the first block of the header must contain the NUREG number (include volume or revision, if applicable), the contractor identification number, and the classification (e.g., unclassified, proprietary). The second block must contain the description of the microfiche and may include the contractor name. The third block must contain the publication date and sheet identification.
5. The header information must be eye readable on a clear background.
6. A foldout page must be microfilmed in sections if the page is too large to be microfilmed in a double frame. No less than 25 mm overlap of original material is acceptable.

*With the exception of items 3, 4, and 8, these specifications are consistent with the American National "Standard for Micrographics-Microfiche, ANSI/AIIM MS5-1985." Copies of this Standard are available from the American National Standards Institute, ATTN: Sales Department, 1430 Broadway, New York, NY 10018 (212)354-3300, or from the Association for Information and Image Management, ATTN: Publications Section, 1100 Wayne Avenue, Silver Spring, MD 20910 (301)598-8202.

Microfiche (E) (continued)

7. The first frame must be blank (on the first sheet only), and the second frame must contain the National Institute of Standards and Technology's Reference Material resolution target in Microcopy Test Charts (NBS SRM 1010A).
8. Jacketed microfiche is unacceptable.

Disclaimer (F)

The following notice will be added by the Regulatory Publications Branch, DFIPS, before the printing process on the inside front cover:

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.

Availability Information (G)

Reference Availability (1)

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 (GPO), at the National Technical Information Service (NTIS), or at other reference or sales outlets) or in the NRC Public Document Room (PDR). This means that references should not be made to personal communications and interviews, unpublished information and information with restricted distribution (e.g.,

Availability Information (G) (continued)

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.

Guidelines for developing and presenting reference material are provided in NUREG-0650, Revision 1.

Report Availability (2)

Most final reports are sold by the GPO and NTIS. A statement indicating this availability is added to each report, as appropriate, by the Regulatory Publications Branch, DFIPS, before the report is printed.

Draft reports for which comments are requested are typically announced in the *Federal Register* as being available from the NRC. These reports are not sold at GPO or at NTIS.

Forms (H)

Bibliographic Data Sheet (NRC Form 335) (1)

All published NRC reports must include an NRC Form 335 as the final right-hand page of the manuscript. Instructions for completing the form appear on the back of the form. A completed Form 335 must be submitted to the Regulatory Publications Branch, DFIPS, with the camera-ready copy of the report. Exhibit 2A shows a completed Form 335.

Release to Publish Unclassified NRC Contractor, Consultant, or Conference Proceedings Reports (NRC Form 426A) (2)

The NRC contact must submit a completed NRC Form 426A (Exhibit 1) with the camera-ready copy of the report to the Regulatory Publications Branch, DFIPS. NRC Form 426A must be signed by the staff member designated by the appropriate Office Director.

Printing and Reprinting (I)

The Regulatory Publications Branch, DFIPS, will review the camera-ready report submitted for printing for its adherence to the standards and requirements set forth in this directive and handbook, as well as any relevant guidelines from NUREG-0650, Revision 1. Unsatisfactory manuscripts will be returned to the NRC contractor for appropriate action.

Submit a memorandum requesting a **reprint** to the Director, DFIPS, for approval. Include with the request a written justification and the approval of the Office Director of designee for reprinting. Send address labels for recipients of the reprinted copies, if appropriate.

Distribution (J)

Distribution arrangements will be made by the Regulatory Publications Branch, DFIPS, for all copies of unclassified formal contractor reports in accordance with instructions on NRC Form 426A (Exhibit 1). The Regulatory Publications Branch, DFIPS, will also arrange automatic distribution of these reports to the NRC NUDOCS, the NRC PDR, NTIS, GPO, and the Depository Library Service.

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

Part III

International Agreement Reports

Background and Rationale (A)

NRC has cooperative nuclear safety research programs that involve either or both foreign governments and organizations and U.S. industry. These programs include monetary contributions, information exchange, and comments on program plans and results as authorized in 42 U.S.C. 5801. To this end, international and U.S. industry agreements have been signed that provide for transmitting unclassified technical information from foreign participants to NRC. These procedures apply only to NRC-managed work.

The interests of all NRC international nuclear safety research program participants are served best by formal dissemination of information on these programs or codes developed for or in cooperation with NRC.

Identification Information (B)

Cover and Title Page (1)

These will contain a title, subtitle (if appropriate), authors, performing organization, and NRC office sponsoring the project. The cover and title page will be prepared by the Regulatory Publications Branch, DFIPS.

NRC Report Number (2)

Each report must be identified by an NRC-controlled alphanumeric number as the prime number unique to that report. The centralized document control system for unique identification is maintained by DFIPS. Numbers may be obtained by calling Regulatory Publications Branch at FTS 49-24954 or (301)49-24954.

The NRC identification number will have the form:

- NUREG/IA-0000
-
-

Identification Information (B) (continued)

NRC Report Number (2) (continued)

where IA indicates "international agreement." The foreign participant's report number, if any, may be inserted below the NUREG number on the cover, if desired.

When a report consists of more than one volume or binding or is issued in more than one edition, an appropriate volume, number, supplement, part, addendum, or revision designation must appear below the report number and the foreign participant's report number, if any.

Previous Reports in Series (3)

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.

Report Organization and Components (C)

The organization and components of cooperative agreement reports vary somewhat, depending on their purpose and scope. Each of these reports must include an abstract of 200 words or less that appears on a separate page before the table of contents. The abstract must also appear on the Bibliographic Data Sheet, Form 335 (Exhibit 2A). Instructions for completing the form appear on the back (Exhibit 2B). Guidance on the special writing requirements for preparing abstracts appears in Section 5.5 of NUREG-0650, Revision 1.

Availability Information (D)

References and Bibliographies (1)

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 GPO, at NTIS, or at other reference or sales outlets) or in the NRC PDR.

This means that references should not be made to personal communications, interviews, and unpublished information with restricted distribution (e.g., proprietary, national security, official use only). If the unretrievable information is important and unrestricted, it

Availability Information (D) (continued)

References and Bibliographies (1) (continued)

can be quoted in the text, in footnotes, or in appendixes. If the title of a document containing proprietary information is unclassified, it can also be quoted in the text, in a footnote, 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. Guidelines for developing and presenting reference material are provided in NUREG-0650, Revision 1.

Report Availability (2)

These reports will be made available for sale by GPO and NTIS.

Disclaimer (E)

The following notice will be added by the Regulatory Publications Branch, DFIPS, on the inside front cover prior to printing.

NOTICE

This report was prepared under an international cooperative agreement for the exchange of technical information. 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.

Forms (F)

Bibliographic Data Sheet (NRC Form 335) (1)

A typed NRC Form 335 (Exhibit 2A) must be submitted with the camera-ready copy to the Regulatory Publications Branch, DFIPS, as the final right-hand page.

Forms (F) (continued)

**Release to Publish Unclassified NRC Contractor, Consultant, or
Conference Proceedings Reports (NRC Form 426A) (2)**

An NRC Form 426A (Exhibit 1) must be completed and signed by the Office Director or designee and submitted with the camera-ready copy of the report to the Regulatory Publications Branch, DFIPS.

**Classified or Sensitive Unclassified
Information (G)**

The NRC contact should refer to Management Directive 12.2, NRC Information Security Program (formerly MC 2101), or call the Division of Security for answers to questions about the status of classified or sensitive unclassified information in NUREG/IA reports.

Part IV

Books

These guidelines apply to books written by contractors and grantees that are printed by NRC. See Section V below for guidance on publications, including books, by grantees.

Definition (A)

A book refers to a publication intended as a permanent reference or as a textbook or major critical review of a technical or regulatory topic.

Format (B)

Books are usually 6 x 9 inches in trim size, but size will be based on such requirements as ease of use and legibility for graphics, foldouts, and the like. The binding (casebound or paperback) will be chosen according to the need for durability. Additional guidance on manuscript preparations can be found in the U.S. Government Printing Office *Style Manual* and in *The Chicago Manual of Style* (13th edition). Refer also to NRC's "Publishing Documents in the NUREG Series" (NUREG-0650, Revision 1).

The contractor shall submit to the NRC project manager the typeset (photocomposed) manuscript suitable for printing. The NRC contact shall submit the manuscript to the Chief, Regulatory Publications Branch, DFIPS, where it will be reviewed for adherence to the standards set forth and referenced in this directive and handbook. The manuscript will also undergo a printing acceptability review by the Printing, Audiovisual, and Mail Services Branch, DFIPS. Unsatisfactory manuscripts will be reported to the NRC contact for appropriate contractual action by the NRC contracting officer or, in the case of Government agency or interagency agreement work, the publications manager of the performing organization.

Format (B) (continued)

DFIPS will approve design of the cover and title page to contain the appropriate information concerning:

- (1) author names(s)
- (2) organizational identification
- (3) public availability and sales.

All books must include a comprehensive subject index of the book's contents, unless it is made up almost exclusively of graphical or tabular matter. See NUREG-0650, Revision 1, or *The Chicago Manual of Style* (13th ed.) for guidelines on creating an index.

NRC Document Number (C)

Each book must be identified by an NRC-controlled alphanumeric code unique to that book. The alphanumeric code will have the form: NUREG/CR for contractor-prepared books and NUREG/GR for grantee-prepared books.

When a book consists of more than one volume or binding, or is issued in more than one edition, an appropriate volume, number, supplement, part, addendum, or revision designation must appear directly below the document number.

Numbers are assigned by the Regulatory Publications Branch, DFIPS. The number may be obtained in advance of the time that the manuscript is submitted to DFIPS for printing by calling the Regulatory Publications Branch at FTS 49-24954 or (301)49-24954. The DFIPS staff will arrange to meet with the NRC contact for the project and when appropriate, the author(s), to discuss the publication production requirements and schedule for the book.

Availability of Reference Materials (D)

The guidelines for availability of reference material applicable in Section II.G. of this handbook also apply to contractor-prepared and grantee-prepared books published by NRC.

Reviews (E)

Peer (1)

NRC published books must undergo peer review from experts within and outside NRC. Peer review refers to a critical evaluation of the technical contents of a publication. These reviews may be conducted anonymously by reviewers from the author's own or a related field who are totally independent of the work leading to the manuscript.

Reviewers should be chosen by the NRC Office sponsoring the book from the potential audience for the publication and should provide an independent judgment about whether the publication successfully accomplishes the author's aims. Peer reviewers should be chosen for their expertise in the subject matter of the book. They may come from academia, the National Laboratories, other Federal agencies, or from other research institutes or consulting firms. They may be identified from the membership rolls of professional societies, ANSI subcommittees, and the like. Do not choose more than one reviewer from the same organization.

When assessing potential peer reviewers, screen for demonstrated competence and achievement in a specific discipline or research specialty. Assess competence based on the quality of research accomplished, publications in refereed journals, and other significant technical activities, achievements, and honors. Consider the judgment, perspective, and objectivity of reviewers. Consider also the personal integrity of those selected to ensure the confidentiality of information reviewed. Finally, avoid real or perceived conflicts of interest. Do not choose reviewers who are licensees or consultants to licensees nor reviewers from intervenor groups. Likewise, do not choose reviewers who may profit financially from influencing the information reviewed.

The services of reviewers from outside the agency may be acquired through consultant services contracts. The decision as to whether to reimburse peer reviewers should be made on a case-by-case basis, however. Recognize that reimbursing peer reviewers may give the appearance of a conflict of interest, suggesting, to some that because NRC is paying for this service, the agency will seek only reviewers thought to be favorably disposed to the material reviewed. One way to offset this impression is to seek recommendations for peer reviewers from independent organizations, like the American Physics Society.

Reviews (E) (continued)

Peer (1) (continued)

the American Nuclear Society, the American Society of Mechanical Engineers, or appropriate universities. Reimbursement could then be made to the organization.

Copyright (2)

Copyrighted material must not be reproduced in NRC books without the written permission of the copyright holder. See NUREG-0650, Revision 1, Section 3.4, for information about obtaining copyright permission.

Security (3)

Based on knowledge of the information sources used, the author is responsible for ensuring that the manuscript does not contain classified or other access-controlled information. If there is uncertainty with respect to the security classification of a reference document or manuscript, an authorized classifier or the NRC Division of Security should be contacted for assistance. See also Management Directive 12.2, NRC Information Security Program (formerly MC 2101).

Patent (4)

The patent-review guidelines for draft and final formal reports specified in Section II.C of this handbook also apply to contractor- and grantee-prepared books.

Publishing Authorization Form (F)

A completed NRC Form 426A (Exhibit 1), signed by the Office Director or designees or by a DOE National Laboratory-authorized official if the publication is done for the Office of Nuclear Regulatory Research, if applicable, must be submitted to DFIPS with the book manuscript.

Disclaimers (G)

The following standard U.S. Government notice will be added prior to printing:

**Unclassified Contractor and Grantee
Publications in the NUREG Series
Part 1 - Publications, Mail, and Information Disclosure
Handbook 3.8 Part IV**

Disclaimers (G) (continued)

This document 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 document, or represents that its use by such third party would not infringe privately owned rights.

The following additional statement may be printed below the standard disclaimer, if authorized by the NRC Office Director or designee.

This document was prepared under U.S. Nuclear Regulatory Commission (NRC) Contract No. _____. The opinions, findings, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the NRC.

Other qualifying statements may be added, if needed.

Printing (H)

Book manuscripts must be submitted by DFIPS to GPO for printing. The printing cycle requires from 6 to 8 weeks.

Distribution and Sales (I)

Distribution will be arranged by the DFIPS staff in accordance with distribution guidance provided by the NRC project manager on NRC Form 426A (Exhibit 1).

Free distribution should be limited to those who contributed materially to the book or to those for whom the book's subject matter bears directly on their work at or for NRC.

DFIPS will arrange to make the book available for sale through GPO. DFIPS will also arrange to have it made available at the NRC PDR and the GPO Depository Library Program.

Part V

Grant Publications

Background and Rationale (A)

The Nuclear Regulatory Commission funds grants for educational and nonprofit institutions, State and local Governments, and professional societies for the expansion, exchange, and transfer of knowledge and ideas pursuant to the Atomic Energy Act of 1954, as amended, Sections 31.a. and 141.b.

Publication of Results (B)

The grant will specify the publication requirements of the award. Grant results may be published by NRC, by the grantee, or in the open literature.

Publication by NRC (1)

This publication option must be governed by the guidelines specified in Part I of this handbook for reports or in Part III of this handbook for books, as appropriate. See Identification of Grant Publications in the paragraphs under V.C.

Publication by a Grantee (2)

When the grant specifies that the grantee is to publish the results, the grantee must grant to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use, and dispose of all copyrightable material first produced or composed in the grantee's performance under the grant.

Open Literature Publication by Grantee (3)

When the grantee submits journal articles for publication, each must be accompanied by the following statement:

Unclassified Contractor and Grantee
Publications in the NUREG Series
Part 1 - Publications, Mail, and Information Disclosure
Handbook 3.8 Part V

Publication of Results (B) (continued)

Open Literature Publication by Grantee (3) (continued)

The submitted manuscript has been authored by a grantee of the U.S. Government under Grant No. _____. Accordingly, the U.S. Government has a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or allow others to do so, for U.S. Government purposes.

All open literature publications prepared under this grant must contain the following statement:

This paper was prepared with the support of the U.S. Nuclear Regulatory Commission (NRC) under Grant No. _____. The opinions, findings, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the NRC.

Should the grantee be requested by the journal or other publisher to transfer the copyright, the grantee author will respond to the journal or other publisher in writing in accord with the sample letter shown as follows:

Dear (Publisher's Name):

We recently received a document for signature assigning copyright and republication rights in the submitted article (title) to (name of publication). This letter is offered in lieu of the document as a means of completing the transfer of ownership. Accordingly, we hereby expressly transfer and assign our rights of ownership in the above-cited work to (name of publisher).

You are advised, however, that the above assignment and any publication or republication of the above-cited work is subject to the following Government rights:

The submitted manuscript has been authored by a grantee of the U.S. Government under grant No. _____. Accordingly, the U.S. Government has a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or allow others to do so, for U.S. Government purposes.

Sincerely,

Publication of Results (B) (continued)

Reprints of Open Literature Publications (4)

When any article resulting from work under the grant is published in a scientific, technical, or professional journal, two reprints of the publication must be sent to the cognizant NRC Program Officer, clearly labeled with the grant number and other appropriate identifying information.

Identification of Grant Publications (C)

Each report or book published by NRC that results from a grant must be identified by an alphanumeric number, as follows:

- NUREG/GR-0000

When the publication consists of more than one volume, number, supplement, part, or binding, or is issued in more than one edition, an appropriate volume, supplement, part, or revision designation must appear below the NUREG/GR number.

Numbers may be obtained from the Regulatory Publications Branch at FTS 49-24954 or (301)49-24954.

Pre-Publication Reviews (D)

The U.S. Congress characterizes the relationship between a Federal agency and a grant recipient as one in which "the recipient can expect to run the project without agency collaboration, participation, or intervention as long as it is run in accordance with the terms of the instrument...."

Glossary*

Book. A publication intended as a permanent reference or textbook or as a major critical review of a technical or regulatory topic. It may be *casebound* (hardback) or paperbound.

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*).

Casebound. Term denoting a book with a hard cover.

Compose. To arrange letters, in type or film, for printing. Usually synonymous with *typesetting*.

Composition. The process of setting type by hot-metal casting, phototypesetting, or electronic character generating devices (e.g., computers) for the purpose of producing *camera copy*, negatives, a plate, or image to be used in the production of *printing* or microform.

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.

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.

Disseminate. To announce the publication of reports and make them available for free distribution, sale, or copying.

*Words in *italics* in definitions are also defined in the glossary.

Glossary (continued)

Distribute. To dispense reports to specific organizations and individuals to ensure 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 Information Support Services, Office of Information Resources Management, at the request of the originating office or region.

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.

Edition. All copies of a book printed from the same type. Edition also refers to format, such as *paperback*, *casebound*, or to the text, as revised, expanded, and so on. If extensive revisions have been made to the text and the book is reprinted, the revised version is the new edition.

Grant. A legal instrument which defines the relationship between the Government and a recipient for the transfer of money, property, services or anything of value to the recipient for the accomplishment of a public purpose of support or stimulation authorized by law. A grant presumes a limited amount of involvement by the agency in the performance by the recipient.

Grant Report. A record of work done prepared in accordance with the provisions of *grant*.

Index. An alphabetical list of all major topics discussed in a *book*. It cites the page numbers where each topic can be found. The index comes as the last section of a book.

International agreement. Cooperative nuclear safety research programs that involve either or both foreign governments and organizations and U.S. industry. Such involvement, authorized under 42 U.S.C. 5801, includes monetary contributions, information exchanges, and comments on program plans and results.

International agreement report. A record of work done prepared in accordance with the provisions of an *international agreement*.

Glossary (continued)

Manuscript. A handwritten, typewritten, or *composed* version of a document, as distinguished from a printed copy.

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.

Paperback. A *book* with a flexible paper cover.

Peer review. A critical evaluation of the technical contents of a publication. These reviews are conducted by reviewers from the author's own or a related field who are totally independent of the work leading to the *manuscript*. Reviewers should be chosen from the potential audience for the publication and should provide an independent judgment about whether the publication successfully accomplishes the author's aims.

Photocomposition. *Typesetting* performed when photosensitive paper or film is exposed to light in the form of letters and characters. Photocomposition is to be distinguished from hot metal and typewriter *composition*.

Printing. As defined by the Joint Committee on Printing, includes and applies to the process of *composition*, platemaking, presswork, collating, and microform; the equipment used in such processes; or the end product produced by such processes and equipment.

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 9.17); and other information submitted in confidence to the NRC by a foreign source and determined to be unclassified by the NRC.

Public domain. Materials on which *copyright* never existed, such as U.S. Government publications, or on which copyright has expired.

Publicly available documents. Information (reports and references) that is available in the NRC Public Document Room (PDR) for public inspection and copying or available in the *public domain*.

Glossary (continued)

Reproducible masters. *Camera-ready copy* that includes (1) originals of line drawings (or prints that can be copied); (2) glossy prints of black and white photographs; (3) original *typeset* or printed text, tables, cover, title page, contents, and abstract; or (4) other forms of the materials that a printer can reproduce.

Trim size. The final size of the whole page, margins included.

Typesetting. The placement of type on a page (letters, numbers, and other characters) in conformance with specific style and layout instructions.

Unique identification. NRC identification (NUREG number) used on a report and its attachments, revisions, and supplements, that is not used on any other publication.

Unclassified Contractor and Grantee
 Publications in the NUREG Series
 Part 1 - Publications, Mail, and Information Disclosure
 Handbook 3.8 Exhibits

Exhibit 1

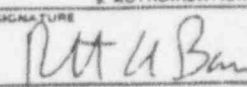
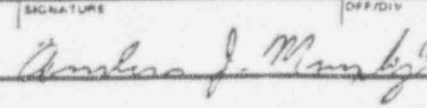
NRC FORM 428A (2-89) NRCM 1101 2085		U.S. NUCLEAR REGULATORY COMMISSION		1. REPORT NUMBER (if any) NUREG/CR-5627 BNL-NUREG-52257	
RELEASE TO PUBLISH UNCLASSIFIED NRC CONTRACTOR, CONSULTANT, OR CONFERENCE PROCEEDINGS REPORTS <small>(Please Type or Print)</small>				<small>Obtain from the Technical Publications Section or 402-7861</small>	
2. TITLE AND SUBTITLE (State in full as shown on attachment) Alternate Modal Combination Methods in Response Spectrum Analysis				3. FIN OR GRANT NUMBER <small>(Do not list DOE contract number)</small> A-3955	
4. AUTHORS (If more than three, name first author followed by "and others") P. Bezler and others					
5. CONTRACTOR Brookhaven National Laboratory Department of Nuclear Energy		MAILING ADDRESS (Number and Street, City, State and ZIP Code) Building 129 Upton, NY 11973		TELEPHONE NUMBER 666-2447	
6. TYPE OF DOCUMENT (Check appropriate box)					
<input checked="" type="checkbox"/> A. TECHNICAL REPORT					
<input checked="" type="checkbox"/> FORMAL <input type="checkbox"/> LETTER REPORT					
<input type="checkbox"/> B. CONFERENCE PAPER (If so, complete items (1), (2), and (3) below)					
(1) TITLE OF CONFERENCE PAPER:					
(2) D/TE(S) OF CONFERENCE:					
(3) LOCATION OF CONFERENCE:					
<input type="checkbox"/> C. OTHER (Indicate type of item)					
7. DISTRIBUTION (List NRC distribution only. Provide mailing address for special distribution not covered by NRC order. If NRC staff, provide name and mail stop only. If in special project, describe mailing address.) RA 50 copies: Judy Liu, Technical Information Division, Bldg. 4778, Brookhaven National Laboratory, Upton, NY 11973 10 copies: Nilesh Chokshi, RES, NLS-217					
8. CERTIFICATION (ANSWER ALL QUESTIONS)					
YES	NO	A. REFERENCE AVAILABILITY - <small>All material referenced in this report should be in the public domain through a public library, the Government Printing Office, the National Technical Information Service, or the NRC Public Document Room. If not, list the name and availability of a commercial document with the reference being below.</small>			
X		SPECIFIC AVAILABILITY			
	X	B. COPYRIGHTED MATERIAL - <small>Does this report contain copyrighted material? If yes, attach a letter or license from the owner that grants the copyright.</small>			
	X	C. COMPUTER CODES - <small>Does this report include a computer code? If yes, does it comply with the standards in NRC Manual Chapter 8901, "Planning and Control of Automated Data Processing (ADP) Packages"?</small>			
	X	D. PATENT CLEARANCE - <small>Does this report require patent clearance? If yes, the NRC Patent Counsel must signify clearance by signing below.</small>			
		NRC PATENT COUNSEL (Type or Print Name)	SIGNATURE	DATE	
	X	E. INFORMATION REQUESTS - <small>Does this report contain any questionnaire, survey, or data collection requests?</small>			
	X	F. LICENSING REQUIREMENTS - <small>Does this report include requirements or licenses?</small>			
9. AUTHORIZATION					
A. DOE LAB AUTHORIZING OFFICIAL (If applicable) (Type or print name) R.A. Bari		SIGNATURE 		DATE 9/25/90	
B. NRC RESPONSIBLE STAFF MEMBER (Type or print name) A. Murphy		SIGNATURE 		OFF/DIV 442-3360	TELEPHONE NLS217A
				MAIL STOP 10/10/90	DATE

Exhibit 2A

BIBLIOGRAPHIC DATA SHEET <small>(See instructions on the reverse)</small>		1. REPORT NUMBER <small>(As indexed by NRC, AEC, NEI, DOE, and other Federal Agencies, if any.)</small>
U.S. NUCLEAR REGULATORY COMMISSION Form 335		NUREG/CR-5603 EGG-2607
2. TITLE AND SUBTITLE Pressure-Dependent Fragilities for Piping Components: Pilot Study on Davis-Besse Nuclear Power Station		3. DATE REPORT PUBLISHED MONTH: YEAR: October 1990
5. AUTHOR(S) D.A. Wesley, T.R. Kipp, D.K. Nakaki, H. Hadidi-Tamjed		4. FIN OR GRANT NUMBER B5699
6. PERFORMING ORGANIZATION - NAME AND ADDRESS <small>(If NRC, provide Division, Office or Region, U.S. Nuclear Regulatory Commission, and mailing address, if different, from above.)</small> ABB Impell Corporation 27401 Los Altos, Suite 480 Mission Viejo, CA 92691		6. TYPE OF REPORT Technical
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9. ABSTRACT <small>(200 words or less)</small> The capacities of four, low-pressure fluid systems to withstand pressures and temperatures above the design levels were established for the Davis-Besse Nuclear Power Station. The results will be used in evaluating the probability of plant damage from Interfacing System Loss of Coolant Accidents (ISLOCA) as part of the probabilistic risk assessment of the Davis-Besse nuclear power station undertaken by EG&G Idaho, Inc. Included in this evaluation are the tanks, heat exchangers, filters, pumps, valves, and flanged connections for each system. The probabilities of failure, as a function of internal pressure, are evaluated as well as the variabilities associated with them. Leak rates or leak areas are estimated for the controlling modes of failure. The pressure capacities for the pipes and vessels are evaluated using limit-state analyses for the various failure modes considered. The capacities are dependent on several factors, including the material properties, modeling assumptions, and the postulated failure criteria. The failure modes for gasketed-flange connections, valves, and pumps do not lend themselves to evaluation by conventional structural mechanics techniques and evaluation must rely primarily on the results from ongoing gasket research test programs and available vendor information and test data.		
10. KEY WORDS/DESCRIPTORS <small>(If any words or phrases that will assist researchers in locating the report.)</small> pressure-dependent fragilities piping components Interfacing System Loss of Coolant Accidents (ISLOCA) probabilistic risk assessment Davis-Besse Nuclear Power Station		11. AVAILABILITY STATEMENT Unlimited
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Unclassified Contractor and Grantee
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Handbook 3.8 Exhibits

Exhibit 2B

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3. **DATE REPORT PUBLISHED.** Each report must carry a date indicating month and year published.
4. **FIN OR GRANT NUMBER.** Insert the FIN or grant number under which report was prepared.
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. **TYPE OF REPORT.** State draft, final, preliminary, topical, technical, regulatory, and use, quarterly, etc.
7. **PERIOD COVERED.** Add inclusive dates.
8. **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.
9. **SPONSORING ORGANIZATION.** If NRC, type "Same as above"; if contractor, provide NRC Division, Office or Region, U.S. Nuclear Regulatory Commission, and mailing address.
10. **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.
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Exhibit 3

MICROFICHE SHEET SAMPLE

NUREG/CR-XXXX CONTRACTOR ID NO. CLASSIFICATION	DESCRIPTION OF MICROFICHE (e.g., Appendix A)	PUBLICATION DATE 81 of 09 (Sheet ID)
CONTRACTOR NAME (Optional)		

1.0 Purpose

The purpose of this procedure is to establish the method for 1) documenting and resolving a simulator discrepancy or 2) requesting a simulator change.

2.0 Applicability

This procedure shall be used by all U.S. Nuclear Regulatory Commission personnel responsible for the conduct of training programs requiring GE, Westinghouse, B&W, or CE simulator utilization.

3.0 Definitions

- 3.1 Initial Condition (IC) - A set of data that represents the status of the reference plant from which real-time simulation can begin.
- 3.2 Local Operation Action (LOA)/Remote Function - Action taken by the simulator instructor to manipulate or change some condition outside the main control room area, i.e. local operator action, plant performance changes.
- 3.3 Malfunction - Condition initiated by the simulator instructor which results in failure or degradation in performance of simulated plant equipment.
- 3.4 Reference Plant - The specific nuclear power plant and unit from which the simulator control room configuration, system control arrangement, and data base are derived.
- 3.5 Similar Plant - A nuclear power plant whose design and configuration are such that it yields performance data comparable to the reference plant's.
- 3.6 Simulator Change - A reference plant or similar plant design modification which must be implemented on the simulator to ensure the simulator adequately reflects reference plant or similar plant design, or actual plant or similar plant performance data which must be incorporated in the simulator modeling to ensure valid simulator performance, or the addition of a new feature (LOA, malfunction, etc.) to the simulator's capability, or an alteration to the simulator environment.

- 3.7 Simulator Configuration Coordinator (SCC) - The NRC employee(s) responsible for maintaining control of the NRC Simulators' configuration and for coordinating the resolution of a SAR.
- 3.8 Simulator Design Data Base - Predicted data, plant design data, and/or actual reference plant or similar plant performance data which form the basis for the existing simulator configuration.
- 3.9 Simulator Discrepancy - An error in the simulator modeling of the design data base or a simulator hardware fault.
- 3.10 Snapshot - The storage of existing conditions at any selected point in time for later recall as an initial condition.
- 4.0 Procedure
- 4.1 A Simulator Action Request (SAR) (Attachment 1) may be initiated by completing the SAR as follows:
- 4.1.1 Indicate whether the SAR is applicable to the GE, Westinghouse, B&W or CE simulator.
- 4.1.2 The person submitting the SAR should print his/her name.
- 4.1.3 Enter the date the SAR was written.
- 4.1.4 Categorize the SAR based on the following criteria:
1. Simulator Change - Design: A reference plant or similar plant design modification which must be implemented on the simulator to ensure that the simulator adequately reflects reference or similar plant design.
 2. Simulator Change - Performance: Actual plant or similar plant performance data which must be incorporated in the simulator modeling to ensure valid simulator performance.
 3. Simulator Change - Enhancement: The addition of a new feature (LOA, malfunction, etc.) to the simulator's capability or an alteration to the simulator environment.

4. Simulator Discrepancy - Modeling Error: An error in the simulator modeling of the design data base.
 5. Simulator Discrepancy - Hardware Fault: A problem with the simulator hardware (switch, meter, etc.).
- 4.1.5 Provide a description of the discrepancy or change, including a clear description of any component(s) involved, if applicable.
 - 4.1.6 Check the "Sheet(s) attached" box if any additional sheets are attached for amplifying information about the SAR and indicate the number of sheets attached.
 - 4.1.7 List all active malfunctions. If there are none, write "N/A".
 - 4.1.8 Enter the Initial Condition (IC) number being used at the time a discrepancy was identified, if applicable. Otherwise, write "N/A".
 - 4.1.9 If a snapshot was taken of a problem, enter the IC number in which the snapshot was saved. If this is not applicable, write "N/A".
 - 4.1.10 Indicate the applicable panel section number. If there is no applicable panel and section, write "N/A".
 - 4.1.11 State the plant conditions at the time of observing a discrepancy (shutdown, pressurization, etc.). If this is not applicable, write "N/A".
 - 4.1.12 List any references (drawings, documents, etc.) which might be helpful in correcting a discrepancy or implementing a change.
 - 4.1.13 The originator should route the SAR to the Simulator Configuration Coordinator (SCC).
- 4.2 A six-digit number shall be assigned to the SAR by the SCC or designee.
 - 4.2.1 The first two digits designate the year, the third character will be an "A", and the last three digits

are sequentially assigned beginning with 001 on January 1 of each year.

Example: SAR No. 91 A 001
 year sequential numbering

- 4.2.2 The SAR number should be entered on each attached sheet as well as on the SAR.
- 4.3 The SAR shall be logged by the SCC or designee.
- 4.4 The SCC shall route the SAR to one or more of the following persons, as appropriate, for review and approval before any further action is taken:
- Simulator Engineer
 - Branch Chief, BWR (or designee)
 - Section Chief, Westinghouse Technology (or designee)
 - Section Chief, B&W and CE Technologies (or designee).
- 4.5 The reviewer's responsibility upon receipt of the SAR is as follows:
- 4.5.1 Upon completion of the review, sign and date the SAR.
- 4.5.2 Indicate the results of the review by checking the "Approved" or "Disapproved" box.
1. If disapproved, the reason shall be noted.
- 4.5.3 The time spent reviewing the SAR should be indicated.
- 4.5.4 If approved, the SAR should be categorized as either a Simulator Discrepancy or a Simulator Change, using the definitions provided in section 3.0 of this procedure.
- 4.5.5 If approved, a priority level shall be assigned to the SAR.
1. Priority 1 - The nature of the SAR is such that it has immediate impact on the ability to conduct training.
 2. Priority 2 - The nature of the SAR is such that it degrades the quality of training. Any

item affecting an existing remote function or malfunction is included in this priority.

3. Priority 3 - The SAR does not have a significant impact on the ability to conduct training or on the quality of training.

4.5.6 The SAR is then returned to the SCC.

4.6 If the SAR has been disapproved, proceed to step 4.12 of this procedure

4.7 If the SAR has been approved, the SCC shall forward it to the simulator maintenance staff for troubleshooting and resolution.

4.8 The simulator maintenance staff's responsibility upon being assigned the SAR is as follows:

4.8.1 Enter the SAR number as assigned on page 1 of the SAR to the top of the SAR Resolution form (Attachment 2).

4.8.2 Indicate whether the SAR is applicable to the GE, Westinghouse, B&W or CE simulator.

4.8.3 Following troubleshooting, check the box identifying the problem area as hardware, software, or both, and indicate the predominant system affected by the SAR.

4.8.4 Update the status of the SAR in the SAR log to indicate its category (change or discrepancy), priority (1, 2, or 3), type (software, hardware, or both), and system affected.

4.8.5 Based on the scope of work identified as being required for SAR resolution and on any scheduled simulator modification work, the simulator maintenance staff and the SCC may decide to have the work done under a Simulator Work Package (SWP) in accordance with procedure number TTC-02.

1. If this decision is made, proceed to step 4.11 of this procedure. Otherwise, proceed to step 4.8.6.

- 4.8.6 Following completion of the necessary action to resolve the SAR, a detailed description of the final action and of the testing conducted should be entered.
1. Check the "Sheet(s) attached" box if additional sheets are used and indicate the number of sheets attached.
 2. Check the "Testing Completed" box when testing of the change has been completed.
- 4.8.7 Any IC's affected by the SAR should be reshot.
- 4.8.8 The simulator maintenance staff person responsible for completion of the action shall sign and date the SAR when all the above work has been completed.
- 4.8.9 The approximate cost of resolving the SAR in terms of man-hours and materials required should be indicated.

NOTE

Steps 4.8.10 through 4.10.2 may be skipped if the SAR was generated to correct a hardware fault. If this is the case, proceed to step 4.10.3.

- 4.8.10 The following simulator documentation shall be revised, as applicable. The person revising a document should initial and date the SAR Resolution form on the line provided when the revision is completed. If a specific document does not have to be revised, "N/A" should be written on the corresponding line of the SAR.
1. Final Design Specification, which consists of the design specification, simulation diagrams, and logic diagrams.
 2. Program Listing.
 3. DATAPOOL variables.
 4. Other - Identify the document(s) revised (e.g., I/O Listings, Simulator Operation Guide).

- 4.8.11 The simulator maintenance staff person responsible for completion of the documentation revision shall sign and date the SAR when all that work has been completed.
- 4.8.12 The approximate cost of revising the documentation in terms of man-hours required should be indicated.
- 4.8.13 The SAR is then returned to the SCC.
- 4.9 The SCC then forwards the SAR to one of the following TTC staff members, depending on the affected simulator, for review of the SAR's impact on simulator procedures and text materials:
- GE Simulator: Branch Chief, BWR
- Westinghouse Simulator: Section Chief, Westinghouse Technology
- B&W or CE Simulator: Section Chief, B&W and CE Technologies
- 4.10 The Branch/Section Chief's or designee's responsibility upon receipt of the SAR is as follows:
- 4.10.1 Review the SAR to determine if any changes must be made to the simulator procedures.
1. The results of the review should be indicated by checking the "Yes" or "No" box.
 2. If changes are required, generate a Procedure Discrepancy Report(s) (PDR(s)) in accordance with procedure TTC-03. Indicate on the SAR that this has been done and record the number(s) of the PDR(s) generated.
 3. The TTC staff person responsible for this review and documentation shall sign and date the SAR.
 4. The approximate cost of the review and documentation of any required changes in terms of man-hours required should be indicated.
- 4.10.2 Review the SAR to determine if any changes must be made to the training text materials.

1. The results of the review should be indicated by checking the "Yes" or "No" box.
2. If changes are required, generate a Text Discrepancy Report(s) (TDR(s)) in accordance with procedure TTC-04. Indicate on the SAR that this has been done and record the number(s) of the TDR(s) generated.
3. The TTC staff person responsible for this review and documentation shall sign and date the SAR.
4. The approximate cost of the review and documentation of any required changes in terms of man-hours required should be indicated.

4.10.3 The SAR is then returned to the SCC.

4.11 If the SAR work was performed under a SWP, a description of the action taken is not required. However, the SWP must be reviewed by the SCC to verify the discrepancy was resolved.

4.11.1 Enter the SWP number and the date of completion.

4.11.2 Indicate the results of the review of the SWP. If the SAR was not resolved, indicate the reason and any action taken, if necessary.

4.12 The SCC shall complete the SAR as follows:

4.12.1 Each sheet of the SAR should be numbered in sequential order.

Example: Sheet 2 of 5 (Attachment 2), sheet 3 of 5, sheet 4 of 5, etc.

4.12.2 The total number of pages in the SAR should be entered on the bottom of page 1 of the SAR.

4.12.3 Each page of the SAR should have the SAR number as assigned on page 1 of the SAR written on it.

4.12.4 The hours spent resolving the SAR should be totalled and indicated on page 1 of the SAR.

4.12.5 Upon completion of all work associated with the SAR, the SAR should be closed out in the SAR log, and signed and dated by the SCC.

4.13 A copy of sheet 1 of the SAR should be forwarded to the originator upon completion.

4.14 Completed SAR's shall be retained for a minimum of four (4) years.

5.0 References

5.1 NRC Technical Training Center - Chattanooga Procedure No. TTC-02, "Simulator Work Packages."

5.2 NRC Technical Training Center - Chattanooga Procedure No. TTC-03, "Simulator Procedure Discrepancy Reports."

5.3 NRC Technical Training Center - Chattanooga Procedure No. TTC-04, "Text Discrepancy Reports."

5.4 ANSI/ANS-3.5-1985, "American National Standard - Nuclear Power Plant Simulators for Use in Operator Training."

6.0 Attachments

6.1 SAR Form A, Simulator Action Request (Example)

6.2 SAR Form B, SAR Resolution (Example)

6.3 SAR Form C, SAR Documentation (Example)

ATTACHMENT 1
PAGE 1 OF 1

TTC SIMULATOR
SIMULATOR ACTION REQUEST

GE Westinghouse B&W CE

* SAR No. *
* _____ *

Submitted by: _____ Date: _____

SAR Category: Simulator Change Simulator Discrepancy
 Design Modeling Error
 Performance Hardware Fault
 Enhancement

Description of Discrepancy/Change: _____

_____ Sheet(s) attached

Malfunction(s) Active: _____

IC No. _____ Snapshot in IC No. _____ Panel/Section No. _____

Operations in Progress: _____

Reference(s): _____

SAR logged

SAR Reviewed by: _____ Date: _____

Approved Disapproved Time Spent Reviewing: _____

If disapproved, reason: _____

SAR Category: Simulator Change Simulator Discrepancy

SAR Priority: 1 2 3

SAR closed Total Time Spent Resolving SAR: _____

Signed: _____ Date: _____

ATTACHMENT 2
PAGE 1 OF 1

TTC SIMULATOR
SAR RESOLUTION

GE Westinghouse B&W CE

* SAR No. *
* * *

SAR Type: Software Hardware Both

Predominant System(s) Affected by SAR: _____

SAR log updated

Description of Action: _____

___ Sheet(s) attached

Description of Testing: _____

___ Sheet(s) attached

Testing Completed IC's Reshot

Completed by: _____ Date: _____

Approximate Cost: Man-hours _____ Materials _____

ATTACHMENT 3

PAGE 1 OF 1

TTC SIMULATOR SAR DOCUMENTATION

GE Westinghouse B&W CE

* SAR No. *
* _____ *

Simulator Documentation Revised (as applicable):

- _____ Final Design Specification _____ DATAPOOL
- _____ New Listing
- _____ Other _____

Completed by: _____ Date: _____

Approximate Cost: Man-hours _____

Procedure Changes Required? Yes No

If "Yes", PDR(s) written PDR Number(s) _____

Completed by: _____ Date: _____

Approximate Cost: Man-hours _____

Text Changes Required? Yes No

If "Yes", TDR(s) written TDR Number(s) _____

Completed by: _____ Date: _____

Approximate Cost: Man-hours _____

OR

This SAR has been addressed by the work done under

SWP No. _____ - completion date: _____

This SAR has been resolved Yes No

If "No," reason and action taken (if applicable): _____

THE FOLLOWING IS A PARTIAL LIST OF THE HARDWARE TO BE MAINTAINED. IT IS NOT ALL INCLUSIVE.

Computer Systems by Simulator

Westinghouse

Encore 32/9780

- 8 MB main memory
- 64 KB cache per processor
- 1 MB shadow memory per processor
- HSDP controller driving two 858 MB disk drives
- HSTP controller driving one tri-density STC 1960 tape drive
- Four ADI's driving simulator I/O system
- Two MPCIs driving two Aydin 5215 display generators
- Two eight-line asynch controllers
- Ethernet controller
- One line printer/floppy disk controller
- One Dataproducts B600 line printer

Babcock & Wilcox Simulator

Encore 32/9780

- 8 MB main memory
- 64 KB cache per processor
- 1 MB shadow memory per processor
- HSDP controller driving two 858 MB disk drives
- HSTP controller driving one tri-density STC 1960 tape drive
- Two eight-line asynch controllers
- Ethernet controller
- One HSD driving simulator I/O system
- One HSD driving IBL link to 32/55
- One line printer/floppy disk controller
- One Dataproducts B600 line printer

Encore 32/55

- 512 KB main memory
- Two ADS cards driving Aydin 5215 display generators
- MHD controller driving one 80 MB removable-pack CDC disk drive
- Tape controller driving two Pertec 45 ips 800 bpi tape drives
- One card reader
- One Dataproducts drum printer
- One HSD driving IBL link to 32/9780

GE BWR/6 Simulator (Black Fox)

Encore 32/9780

- 8 MB main memory
- 64 KB cache per processor
- 1 MB shadow memory per processor
- HSDP controller driving two 858 MB disk drives

HSTP controller driving one tri-density STC 1960 tape drive
Two eight-line asynch controllers
Ethernet controller
Two HSDs driving simulator I/O system
One HSD driving IBL link to 32/55
One line printer/floppy disk controller
One Dataproducts B600 line printer

Encore 32/55

512 KB main memory
Five HSDs driving Aydin 5205B display generators
MHD controller driving one 40 MB removable-pack CDC disk drive
Tape controller driving two Pertec 45 ips 800 bpi tape drives
One card reader
One Dataproducts drum printer
One HSD driving IBL link to 32/9780

Encore 32/6780

8 MB main memory
HSDP controller driving one 858 MB disk drive and one 337 MB disk drive
UPD controller driving two 80 MB removable-pack CDC disk drives
Tape controller driving one Kennedy 45 ips 800/1600 bpi tape drive
Two eight-line asynch controllers
Ethernet controller
One line printer/floppy disk controller
One Dataproducts B600 line printer

GE BWR/4 Simulator (Shoreham)

Encore 32/8780 (2 systems). Exact configuration is not readily available.
However, each system supports the following as a minimum:

8 MB main memory
64 KB cache per processor
UDP controller driving two 300 MB removable-pack CDC disk drives
HSTP controller driving two tri-density STC 1960 tape drive
Two eight-line asynch controllers
Ethernet controller
One line printer/floppy disk controller
One Dataproducts B600 line printer

Additionally, one 32/8780 is equipped with two HSDs driving the simulator I/O system.

Encore Multiprocessor Shared Memory System (MS²)

Encore VP3300 Vector Processor

Additionally, there is one spare Encore 32/8750 system, spare tape drive, spare disk drive, and spare MS².

It is presently planned to replace the Shoreham computer system with two Encore RSX systems and one Encore 91 system.

Trojan (Future) (Estimate)

Encore 32/9780 (2 Systems)

- 8 MB main memory
- 64 KB cache per processor
- ? MB shadow memory per processor
- UDP controller driving two 300 MB removable-pack CDC disk drives
- HSTP controller driving two tri-density STC 1960 tape drives
- Two eight-line asynch controllers
- Ethernet controller
- One line printer/floppy disk controller
- One Dataproducts B600 line printer
- One Cache Disk Accelerator

Encore Multiprocessor Shared Memory System (MS²)

Additionally, one of the Encore 32/9780's is equipped with five ADI controllers for simulator I/O purposes. One Encore is equipped with an SAIC Q-bus link to the MicroVax process computer. One Encore is equipped with a Flavors Technology controller forming a memory link between the Encore and a Sun 3 Instructor Station.

Encore 32/9780 Spare System

- 8 MB main memory
- 64 KB cache per processor
- ? MB shadow memory per processor
- UDP controller driving one 300 MB removable-pack CDC disk drives
- HSTP controller driving one tri-density STC 1960 tape drives
- Two eight-line asynch controllers
- Ethernet controller
- One line printer/floppy disk controller
- One Dataproducts B600 line printer
- One Cache Disk Accelerator

Sun 3/260 Systems (3 Systems)

Configuration unknown. One system is used for the Instructor Station, one is used as a roll-around instructor station, and the third is used for database management.

MicroVax 4000-200 Process Computer

Configuration unknown.