AWARD/CONTRACT

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

2. CONTRACT NO. (Proc. Inst. Ident.) No.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQUEST/PROJECT NO.
NRC-04-90-069	3/23/90	RES-89-046

5. ISSUED BY Code:

U.S. Nuclear Regulatory Commission
Div. of Contracts & Property Mgmt.
Contract Negotiation Br. 2
Washington, DC 20555

6. ADMINISTERED BY Code: P-902
(If other than Item 5)
Contract Administration Branch
Div. of Contracts & Property Mgmt.
Mail Stop P-902
Washington, DC 20555

7. NAME AND ADDRESS OF CONTRACTOR
Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Duns Code:
Facility Code:

8. DELIVERY
( ) FOB ORIGIN
( ) 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

U.S. Nuclear Regulatory Commission
Division of Accounting and Finance
GOV/COM Accounting Section
Washington, DC 20555

13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION
( ) 10 U.S.C. 2304(c)( ) (X) 41 U.S.C. 253(c) (1)

14. ACCOUNTING AND APPROPRIATION DATA
B&R No. 0601921010 Fin No. B57020
31X0200.609 OBLIGATE: $862,000.00

15A. ITEM NO.	15B. SUPPLIES/ SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
	Perform research entitled "Short Cracks in Piping and Pipe Welds Research Program" in accordance with the Statement of Work herein, and as implemented by Battelle Memorial Institute Technical Proposal No. 723-U-3547R4.				

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15G. TOTAL AMOUNT OF CONTRACT $4,191,786.00

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CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE

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

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

19A. NAME AND TITLE OF SIGNER (Type or print)	20A. NAME OF CONTRACTING OFFICER
W. MICHAEL BEWELL, CONTRACTING OFFICER	Mary Mace
19B. NAME OF CONTRACTOR	20B. UNITED STATES OF AMERICA
by W. Michael Bewell (Signature of person authorized to sign)	by Mary Mace (Signature of Contracting Officer)
19C. DATE SIGNED MAR 19 1990	20C. DATE SIGNED 3/23/90

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

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PART I - THE SCHEDULE

SECTION B - SUPPLIES OR SERVICES AND PRICE/COSTS

B.1 PROJECT TITLE

The title of this project is as follows:

SHORT CRACKS IN PIPING AND PIPE WELDS
RESEARCH PROGRAM

(End of Clause)

B.2 BRIEF DESCRIPTION OF WORK (MAR 1987)

Confirmatory research to develop, improve, and verify engineering methods for assessing the integrity of nuclear power plant piping containing defects. Provide for additional testing to achieve a more complete understanding of the behavior of degraded piping containing relatively short cracks and of bi-metallic welds containing cracks.

(End of Clause)

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

a. The total estimated cost to the Government for full performance of this contract is $4,191,786.00, of which the sum of $3,857,589.00 represents the estimated reimbursable costs, and of which $334,197.00 represents the fixed fee.

b. There shall be no adjustment in the amount of the Contractor's fixed fee by reason of differences between any estimate of cost for performance of the work under this contract and the actual cost for performance of that work.

c. The amount presently obligated by the Government with respect to this contract is $862,000.00.

d. It is estimated that the amount currently allotted will cover performance through 12/01/90.

(End of Clause)

B.4 CONSIDERATION AND OBLIGATION-PRICED OPTIONS

a. The following is a list of the negotiated prices (each on a cost plus fixed fee basis) for each of the optional tasks listed in the contractor's technical proposal and in section C herein:

1. OPTIONAL TASK 3.1.5. The total estimated cost to the Government for full performance of this task is $103,763, of which the sum of $95,520 represents the estimated reimbursable costs, and of which $8,243 represents the fixed fee.

2. OPTIONAL TASK 3.1.6. The total estimated cost to the Government for full performance of this task is $101,794, of which the sum of $93,692 represents the estimated reimbursable costs, and of which $8,102 represents the fixed fee.

3. OPTIONAL TASK 3.2.4. The total estimated cost to the Government for full performance of this task is $142,645, of which the sum of $131,289 represents the estimated reimbursable costs, and of which $11,356 represents the fixed fee.

4. OPTIONAL TASK 3.2.5. The total estimated cost to the Government for full performance of this task is $193,473, of which the sum of $178,133 represents the estimated reimbursable costs, and of which $15,340 represents the fixed fee.

b. There shall be no adjustment in the amounts of the contractor's fixed fees for any of the tasks above by reason of differences between any estimates of costs for performance of the tasks described above and the actual cost for performance of those tasks.

c. There is no money presently obligated for these optional tasks. Funds will be obligated for any or all of the tasks at the time of exercise of any of the options.

(End of Clause)

SECTION C - DESCRIPTION/SPECIFICATION /WORK STATEMENT

C.1 STATEMENT OF WORK

C.1.1 Introduction

Ensuring the integrity of piping in nuclear reactor power plants is a high priority objective of the U.S. Nuclear Regulatory Commission (NRC). Pipe cracking over the past decade has had a significant impact on the reliability of operating nuclear power plants, has resulted in high financial costs and personnel exposure, and has raised concerns regarding the safe operation of nuclear facilities. Data and analysis techniques that can be applied to the evaluation of piping integrity issues are currently needed by government and industry alike.

Ductile fracture mechanics analyses have been developed addressing many types of service induced cracks. These analyses have been used in developing evaluation procedures and acceptance criteria for cracks detected during in-service inspections. However, the data bases used to validate these analyses were limited and have focussed on crack sizes larger than those of interest in many service applications. Further, the procedures being developed to demonstrate that piping will exhibit leak-before-break require analyses to show that cracks that would produce detectable leakage would also remain stable under accident loading conditions. These crack sizes typically are smaller than the crack sizes used in the confirmatory research.

Because of the critical relation between piping fracture mechanics analyses and assuring piping integrity for service applications, it is imperative that the analyses be compared to pertinent experimental data and improved as necessary. The NRC has initiated several research programs addressing piping integrity, and these programs are significantly improving the state of the art in ductile piping fracture mechanics. However, very important additional work remains to be done, addressing smaller crack sizes and bi-metallic welds. The research to be performed under this contract shall address these and other pertinent topics.

C.1.2 Background

Cracking has been observed in the piping systems of operating light water reactors since 1965. The severity and safety significance of the cracking led the NRC and industry to fund several research programs aimed at assessing the problem and finding remedies. The NRC has initiated several programs to develop licensing criteria for operating plants and plants under

licensing review to ensure that adequate levels of piping integrity are maintained during anticipated transient and postulated accident loading conditions.

In 1981, the NRC initiated a program with Battelle's Columbus Division to plan a comprehensive experimental piping program to develop the data necessary to validate piping integrity analyses. The results of that program are reported in NUREG/CR-3142, "The Development of a Plan for the Assessment of Degraded Nuclear Piping by Experimentation and Tearing Instability Fracture Mechanics Analysis." This plan was used in developing a 1983 competitive procurement entitled "Degraded Piping Program - Phase II." Contract NRC-04-84-103 was subsequently awarded to Battelle to perform the work.

The results of the Degraded Piping Program - Phase II have identified several areas that warrant further work. The following Statement of Work has been developed to address those areas.

C.1.3 Contract Objectives

The general objective of this contract is to develop, improve, and verify engineering methods for assessing the integrity of nuclear power plant piping containing defects. This will be accomplished by building upon the Degraded Piping Program - Phase II, specifically to include research and testing to achieve an understanding of the behavior of piping containing relatively short cracks and bi-metallic welds containing cracks.

C.1.4 Scope of Work

The contractor shall furnish all personnel, materials, equipment, facilities, and services necessary to perform the technical tasks listed below.

C.1.5 Task Descriptions

TASK 1.0 - PIPE FRACTURE EXPERIMENTS

Task Objective. The objective of this task is to develop the necessary experi-mental data for assessing the analysis methods for crack lengths used in leak-before-break (LBB) and inservice flaw inspection analyses of nuclear piping.

Task Approach. The approach to be followed in this task shall be similar to that used in the Degraded Piping Program - Phase II, and reported in Refs. 1-8. Briefly, the experimental procedure used in that program involved preparing a pipe fracture specimen with a circumferentially oriented flaw, either through-wall or part-through-wall depending on the test parameters. Lengths of pipe were attached to each end of the specimen to act as "moment arms." The pressure and temperature were increased to the desired test values, and, subsequently, the bending loads were increased monotonically until the specimen 'failed'. Specimen failure generally was defined as the point when the specimen completely

severed, as the point when further crack growth data would be meaningless, or as the point when further ductile crack extension would exceed the test system's deflection capacity. The data collected during the experiments included: pressure; temperature; applied bending loads; rotation of the pipe about the crack, load point deflection, or both, as a function of applied load; flaw length as a function of bending load; and crack opening displacement at various locations along the crack length as a function of bending load. The results of the experiments were analyzed, compared to existing pipe fracture analysis methods, and reported both in progress reports and in detailed data record books. Additionally, the materials tested were thoroughly documented and the material properties reported.

For all pipe fracture experiments conducted as part of this task, the data recorded shall include: pressure; temperature as a function of position along the specimen length; pipe diameter and wall thickness; distance between loading points and distance between the loading points and the outer support points; applied load; load point displacement or rotation; crack length as a function of applied load; crack opening displacement at not less than three locations along the crack length as a function of applied load; and pipe ovalization near the cracked cross section and remote from the cracked cross section.

It is anticipated that plastic deformation will occur at cross sections other than the cracked cross section for the pipe fracture experiments conducted in this task. Consequently, limited uncracked companion pipe 'fracture' experi-ments shall be conducted to provide data so that the rotation due to the crack can be separated from the total rotation in the cracked pipe fracture experi-ments. The contractor may propose other approaches, justifying them in his proposal.

All materials used in this task shall be fully documented. At a minimum, the following shall be determined: material chemistry; yield and ultimate tensile strength at room temperature and at 550 F; Charpy impact energy as a function of temperature; J_{Ic} at room temperature and at 550 F; and the J-R curve at room temperature and at 550 F. Further, for the tensile tests, the load and strain values from each test shall be recorded on a magnetic media (tape or diskette) in a format to be specified by the contractor and provided to the NRC Project Officer. Similarly, for the J_{Ic} tests and the J-R curve tests, the load, load-point deflection, and crack length data, along with specimen details shall be recorded and provided to the NRC Project Officer.

The data for all pipe fracture experiments in this task shall be reduced and analyzed using currently accepted pipe fracture analysis procedures. A detailed data record book entry shall be prepared for each experiment, clearly describing the experimental set-up, the test procedure, the data collected, and the overall results of the experiment. The data collected shall be tabulated in the data record book entry so that detailed analysis can be conducted by other analysts without consulting with the

contractor. An example of the desired data record book entry is included as Appendix A.

Three areas are to be investigated in this task -- fracture of pipe with short through-wall cracks, fracture of pipe with short surface cracks, and fracture of pipe with cracks in bi-metallic welds. These areas and details of the test conditions are discussed in the following subtask descriptions.

Subtask 1.1 Fracture Behavior of Pipe with Short Through-wall Cracks

Subtask Objective. The objective of this subtask is to develop data for pipe under quasi-static loading with crack lengths typically used in leak-before-break (LBB) analyses for large diameter pipe.

Subtask Rationale. Currently accepted leak-before-break analyses compare a so-called leakage crack length to the crack length that would propagate unstably under specified loading conditions. The crack lengths typically considered are in the range of 5 - 7 inches. However, most of the pipe fracture experiments conducted in the Degraded Piping Program - Phase II (Refs. 1-8) and in other national and international research programs have used crack lengths on the order of 30% to 50% of the pipe circumference. These long crack lengths have been used mostly to preclude plastic deformation in regions remote from the crack tip. In this way, the need for an uncracked "control" experiment was eliminated and the costs of the research were significantly reduced.

Unfortunately, some of the elastic-plastic analysis procedures used in LBB analyses begin to become unreliable for the shorter crack lengths of interest. Consequently, it has become necessary to perform a series of experiments to either validate the existing analyses or to provide benchmarks for subsequent analysis developments.

Subtask Approach. The approach for this subtask is to perform pipe fracture experiments using circumferentially-oriented through-wall cracks subjected to bending loads, tension loads, or both. The general test conditions are described below.

The crack length shall be approximately equal to that which would be considered in a leak-before-break analysis. The exact crack lengths to be used shall be specified by the contractor and justified in his proposal.

Three materials shall be used: a carbon steel base metal, a carbon steel flux weld, and a stainless steel flux weld. The base materials and the welding materials and procedures shall be typical of those used in LWRs.

The pipe diameters and wall thicknesses shall be specified by the contractor and shall be justified in his proposal. However, the minimum acceptable pipe diameter is 6 inch NPS (Nominal Pipe Size)

and the range of diameters and wall thicknesses considered shall be representative of those used in typical LWRs. The maximum diameter tested shall be sufficiently large to reflect any 'diameter' effects. NOTE: The largest LWR 'typical' pipe tested during the Degraded Piping Program - Phase II was 37 inch outside diameter pipe with a 3.5 inch wall thickness and this was considered adequate to avoid 'diameter' effects. It is desirable that a similar pipe size be tested in this program.

The test temperature shall be 550 F. All tests shall be with 4-point bending loading only.

Subtask 1.2 Fracture Behavior of Pipe with Short Surface Cracks

Subtask Objective. The objective of this subtask is to develop fracture data for pipe with crack lengths that are in the short to middle range of the crack sizes in the ASME Section XI IWB-3640 and -3650 flaw evaluation tables

Subtask Rationale. The procedures used to evaluate the significance of flaws detected in nuclear reactor piping are given in article IWB-3640 for austenitic materials and in the Draft Article IWB-3650 for ferritic materials. Both of these articles pertain to surface flaws and are based on a limit load failure concept. However, stress multipliers are provided for materials with a relatively low fracture toughness, compensating for the expected failure below the predicted limit load for pipe made from these materials. The stress multipliers have been derived using elastic-plastic fracture mechanics analyses for circumferentially-oriented through-wall cracks. While this approach has proven to be very conservative when compared to pipe fracture experiments using large surface cracks, it is untested for more realistic crack sizes.

Subtask Approach. The approach for this subtask is to perform pipe fracture experiments using circumferentially-oriented surface cracks whose sizes are consistent with the crack sizes addressed in Section XI of the ASME Boiler and Pressure Vessel Code. One set of tests shall be used to assess the ovalization corrections for limit-load failure. The second set of tests shall be subjected to combined bending and tension loads. The general test conditions are described below.

Two crack sizes are of interest -- essentially the smallest size considered in the Section XI flaw evaluation procedures and approximately the middle of the range of flaw sizes considered in those procedures. The Degraded Piping Program - Phase II considered flaw sizes at the upper limit of the sizes permitted by Section XI.

Four material types shall be used: a carbon steel base metal, a carbon steel flux weld, a stainless steel flux weld, and a stainless steel base metal. The carbon steel materials and the stainless steel flux weld shall be the same as those used in Subtask 1.1.

The pipe diameters and wall thicknesses shall be specified by the contractor and shall be justified in his proposal. However, the minimum acceptable pipe diameter is 6 inch NPS and the range of diameters and wall thicknesses considered shall be representative of those used in typical LWRs. The maximum diameter tests shall be sufficiently large to reflect any 'diameter' or 'R/t" effects. NOTE: The largest pipe tested in the Degraded Piping Program - Phase II using a surface crack was 16 inch NPS with a 1 inch wall thickness. The largest R/t was approximately 20.

The test temperature shall be 550 F. The test pressure shall be chosen to produce an axial stress of 0.5 S_m, where S_m is the design stress intensity for the material under test. Other test pressures may be proposed by the contractor and justified in the contractor's proposal.

Subtask 1.3 Fracture Behavior of Pipe with Flaws in Bi-metal Welds

Subtask Objective. The objective of this subtask is to generate experimental pipe test data and basic material property data for pipe flaw evaluations when the crack is located at a bi-metallic weld interface.

Subtask Rationale. Nuclear reactor piping systems contain many bi-metallic welds. Virtually every PWR has at least one bi-metallic joint in each leg of the primary coolant system, either at the pump nozzle or at the vessel nozzle for the cold leg as a specific example. There are many more examples of these bi-metallic joints in the balance of the primary coolant system and in the balance of plant piping. However, there are no methods for evaluating cracks in these welds. Further, there are no experimental benchmarks that could be used in validating analysis methods. Since there are many of these bi-metallic joints and since they typically are located at nozzles and other branch connec-tions subjected to relatively large loads and high fatigue usage, it is reasonable to anticipate that cracking may ultimately be detected at these joints. Consequently, appropriate flaw analysis methods are needed as are experimental benchmarks for validating such analyses.

Subtask Approach. The approach for this subtask is to perform pipe fracture experiments using circumferentially-oriented surface and through-wall cracks located in bi-metallic welds. A separate task of this project will address developing appropriate analysis methods.

Two experiments shall be performed as part of this subtask. Both experiments shall use bi-metallic joints in the cold leg piping from a cancelled PWR. The material was procurred as part of the Degraded Piping Program - Phase II and will be provided to this contract. The Degraded Piping Program - Phase II designation for this material is DP2-F34 (see Ref. 8). The ferritic base metal is A-516 Grade 70, 37 inch outside diameter with a 3.25 inch wall thickness.

The first experiment shall use a through-wall crack located in the ferritic-to-austenitic weld. For example, in the case where a ferritic nozzle is welded to a 304 stainless steel safe-end, the end of the ferritic nozzle typically is "buttered" with SA-182 or SA-82 weld wire. This weld metal surface is then welded to the 304 stainless steel safe-end. In this example, the crack would be placed in the SA-182 weld metal. The crack length shall be approximately equal to that used in a leak-before-break analysis. The exact crack length to be used shall be specified by the contractor and justified in the contractor's proposal.

The second experiment shall use a surface crack also located in the ferritic-to-austenitic weld. The crack dimensions -- depth and length -- shall be approximately in the middle of the range of crack sizes considered in the applicable Section XI flaw evaluation procedures. The exact crack dimensions shall be specified by the contractor and justified in the contractor's proposal.

Both experiments shall be conducted at 550 F. The through-wall crack experiment will be conducted at ambient pressure. The surface crack experiment shall be pressurized to 2250 psig.

Data from laboratory specimens shall be used to provide further insight to the behavior of bi-metal welds, including an evaluation of specimen size effects for non-homogeneous material.

TASK 2.0 - PIPE FRACTURE ANALYSES

Task Objective. The objective of this task is to improve and verify the analysis methods used in LBB and inservice flaw inspection criteria.

Task Approach. The approach is to evaluate existing pipe fracture analysis methods, identify deficiencies, develop changes to the existing analyses or new analyses as necessary, and validate the analyses using experimental data developed in Task 1.0 and in other research programs to provide the comprehensive analysis methods needed to meet the objective. Elastic-plastic finite element analyses may be required to evaluate the experimental data. However, the product of this task shall be engineering estimation analyses, incorporated into the pipe fracture analysis computer program NRCPIPE developed as part of the Degraded Piping Program - Phase II (Ref. 8).

There are three technical areas to be investigated in this task -- analyses for short through-wall and surface cracks, cracks in bi-metallic welds, and crack opening area estimates for cracks in welds of all types. These areas are discussed in the descriptions of subtasks 2.1 - 2.3. Subtask 2.4 pertains to incorporating the analysis methods into the NRCPIPE computer code.

Subtask 2.1 Analyses for Short Through-wall and Surface Cracks

Subtask Objective. The objective of this subtask is to develop, improve and verify the engineering analyses for short, circumferentially-oriented, through-wall and surface-cracked pipe.

Subtask Rationale. As discussed in Subtask 1.1, currently accepted leak-before-break analyses involve relatively short through-wall cracks. The elastic-plastic fracture analysis methods for through-wall cracks were developed and validated for relatively long cracks and must be extrapolated to the shorter crack lengths, raising questions about the validity of the analyses for these shorter crack lengths. Unfortunately, there have been few pipe fracture data that could be used to validate these extrapolations.

While there may be problems with extrapolating the through-wall crack analyses to shorter crack lengths, only recently have there been any analyses for circumferentially oriented surface cracks (Ref. 8). The analyses developed in the Degraded Piping Program - Phase II have provided the first engineering estimation schemes for these cracks. However, as with the through-wall cracks, the analyses and experimental data are for long cracks while the service applications typically are for much shorter cracks.

Subtask Approach. The approach for this subtask is to evaluate the accuracy of the available engineering estimation schemes for short, circumferentially- oriented through-wall and surface cracks by comparing predictions of initiation and maximum loads for the pipe fracture experiments to the actual experimental loads. Further, comparisons between the estimation schemes and detailed finite element analyses shall be made to establish the limits of validity for the estimation schemes and to expand those limits, as necessary, to include crack sizes and geometries pertinent to LWR service experience.

Special attention shall be devoted to the question of appropriate material properties to be used in evaluating cracks in and near welds. Current analysis schemes are not clear on this point and further guidance and validation is warranted. Specifically, cracks of interest may occur in the base metal, the heat affected zone, the fusion line, or the weld metal, and the guidance sought pertains to what combinations of tensile and fracture toughness properties are appropriate for each of these crack locations. Further, guidance is sought on the most appropriate method for fitting the stress-strain data using the Ramberg-Osgood power law equation.

Separate topical reports on through-wall and surface cracks shall be prepared describing the estimation schemes, any improvements made in those schemes, results of any finite element analyses performed, and comparing the estimation schemes to the pipe fracture experiments. If improvements have been made in the estimation schemes, the reports shall include comparison between the estimation schemes available at this time and the improved

schemes. The reports shall include clear guidance on the most appropriate material proper-ties to be used in evaluating flaws in and near welds. Finally, the surface crack report shall include a comparison between the Section XI allowable flaw tables for austenitic and ferritic steel pipe and the critical surface crack sizes computed using the estimation scheme for surface cracks and material properties embodied in the Section XI tables.

Subtask 2.2 Analyses for Cracks in Bi-metallic Welds

Subtask Objective. The objective of this subtask is to develop the necessary engineering estimation schemes for through-wall and surface cracks located in bi-metallic welds subjected to combined bending and tension loads.

Subtask Rationale. As discussed in Subtask 1.3, there are many bi-metallic welds in nuclear reactor piping systems and these welds typically are located in regions subject to relatively large loads and high fatigue usage. However, the effects of the bi-metallic welds and the associated dissimilar metal stresses have not been examined and it is not clear that existing engineering estimation schemes are appropriate for evaluating potential flaws in and near these welds.

Subtask Approach. The approach for this subtask is to compare predictions of initiation and maximum loads for the experiments in Subtask 1.3 to the experimental loads. Particular emphasis shall be placed on determining appropriate material properties to be used in the analyses. If the existing analyses do not provide predictions that are as accurate as those for similar-metal welds, then new or improved analyses shall be developed. Finite element analyses shall be used to guide development of engineering estimation schemes.

A topical report shall be prepared describing the analyses and the comparisons between the predictions and the experimental results. Special emphasis shall be placed on the choice of material properties to be used in the analyses. Finally, the report shall provide a comparison between the Section XI allowable crack size tables for austenitic pipe and the critical crack sizes computed using the surface crack estimations scheme, and a comparison between the existing estimation schemes for through-wall cracks and those developed for through-wall cracks in bi-metallic welds.

Subtask 2.3 Crack Opening Area Estimation Schemes

Subtask Objective. The objective of this subtask is to develop improved crack opening area estimation schemes for through-wall circumferential cracks in or near welds of all types and subjected to combined bending and tension loads.

Subtask Rationale. Current leak-before-break analyses require computing the crack size that would produce a specified leak rate for normal operating loads. A fundamental part of this computation is estimating the crack opening area for the specified

loadings. The method used most often today is based on the so-called GE/EPRI J-estimation scheme, assuming an elliptical opening shape. However, this scheme is based on cracks in the base metal of straight pipe. The effects of welds, dissimilar metals, and local geometry changes -- such as cracks at the weld between straight pipe and an elbow -- and pipe ovalization are ignored or, at best, treated as an engineering approximation. Since crack opening area is a fundamental input to leak-before-break analyses, it is important to provide validated, accurate methods for estimating this parameter, particularly for short through-wall cracks.

Subtask Approach. The crack opening displacement data and crack opening shapes determined in Subtasks 1.1 and 1.3 shall be compared to predictions made using existing estimation schemes. Improvements in these estimation schemes shall be developed, making use of finite element analyses as necessary. The improved analyses shall account for the effects of welds, dissimilar metals, local geometry changes, ovalization, and any other parameters that are found to be important during the course of this investigation.

A topical report shall be prepared describing the improved estimation schemes, providing clear guidance on the material properties to be used in the analyses. The report shall include comparisons between predictions made using the improved estimation schemes and the experimental results of Subtasks 1.1 and 1.3, as well as any other pertinent data. Finally, the report shall provide a comparison between predictions made using the current estimation schemes and the improved schemes.

Subtask 2.4 Changes to NRCPIPE Computer Code

Subtask Objective. The objective of this subtask is to incorporate the analyses developed in Subtasks 2.1, 2.2, and 2.3 into the NRCPIPE computer code, providing a user-friendly computer code for analyzing cracked pipe.

Subtask Rationale. As part of the Degraded Piping Program - Phase II, a user-friendly computer code was developed, capable of running on an IBM personal computer, to provide a capability for analyzing cracked pipe using any of the currently available estimation schemes (Ref. 8). That computer code, called NRCPIPE, was written in 'compiled' BASIC and has been provided to the NRC. The code suffers from the limitations imposed by the currently available engineering estimation schemes. Since those schemes will be improved as part of this program, it is desirable to include the improvements in the NRCPIPE code.

Subtask Approach. The NRCPIPE source code, executable version, and documentation will be provided to the contractor by the NRC. The contractor shall revise the code to include the improved engineering estimation schemes developed in Subtasks 2.1, 2.2, and 2.3. Additional improvements may be made to the code with the approval of the NRC Project Officer and Contracting Officer. The

contractor shall perform quality assurance calculations to assure that the revised code is working correctly. The user's guide and code documentation shall be revised to reflect the changes made to the code. The revised source code, executable version, and documentation shall be provided to the NRC as a deliverable.

TASK 3.0 - EVALUATION OF THE EFFECTS OF DYNAMIC STRAIN AGING AND ANISOTROPIC MATERIALS CHARACTERISTICS

Task Objective. The objective of this task is to evaluate the effects of dynamic strain aging and anisotropic materials characteristics on fracture behavior of pipe and on the prediction of that behavior.

Task Approach. This task is best addressed through a combined analytical and experimental effort. The experimental efforts would seek to quantify the effects of dynamic strain aging and material anisotropy on material behavior, and the analytical efforts would seek to assess the significance of those quantities on the fracture behavior of cracked pipe. Both of the subtasks below have base programs which can be supplemented by optional work described below.

Subtask 3.1. Effect of Dynamic Strain Aging.

Subtask Objective. The objective of this subtask is to assess the effect of dynamic strain aging on the fracture behavior of piping materials.

Subtask Rationale. During laboratory specimen tests and pipe fracture experi-ments for many carbon steels, local instabilities in the fracture process have been observed. These instabilities are characterized by rapid increases in crack length and an associated drop in applied load. The instabilities have been attributed to dynamic strain aging. The discontinuous nature of the fracture due to these instabilities raises questions about the validity of a J-based analysis.

Subtask Approach. Using a combination of material property testing and fracture analysis, assess the significance of the instabilities produced in an otherwise continuous process. The first step shall be to establish a screening criterion to predict unstable crack jumps in ferritic steels. In addition, procedures for characterizing fracture resistance during crack jumps in laboratory specimens shall be developed. Once suitable analysis procedures have been developed for the laboratory specimens, the ability of current pro-cedures to account for effects of dynamic strain aging on pipe fracture behavior shall be assessed. A topical report shall be prepared describing the effects of dynamic strain aging, the work performed as part of this task, and the conclusions reached.

Should current procedures prove inadequate, the Government may exercise its unilateral option to require performance of the

following work. This work shall establish the validity of a J-based analysis for pipe fracture when dynamic strain aging effects are present and, if necessary, shall develop alternate procedures that can predict pipe fracture in the presence of dynamic strain aging. This work shall concentrate initially on procedures for assessing laboratory specimens, with assessment of pipes as part of additional optional subtask. (The optional tasks are designated in the contractor's technical proposal as subtask 3.1.5 and subtask 3.1.6 and are priced separately in section B. of the contract. The Government may exercise the option for performance of either task or both tasks.)

Subtask 3.2. Effect of Material Anisotropy.

Subtask Objective. The objective of this subtask is to assess the effect of material anisotropy and out-of-plane crack growth of cracked pipe.

Subtask Rationale. The Degraded Piping Program - Phase II has shown that for circumferentially cracked carbon steel pipe, there is a tendency for the cracks to propagate around the circumference in a "zig-zag" pattern rather than remaining in the circumferential plane (Ref. 8). This out-of-plane growth has been observed even though the crack driving force is a maximum for in-plane growth. A cursory study of material characteristics of seamless carbon steel pipe conducted in the Degraded Piping Program - Phase II showed that the fracture toughness of the material was a minimum at an angle of approximately 30 degrees to the pipe axis. Further, in one experiment using rolled-and-welded pipe, the crack turned out of the circumferential plane and propagated axially for several inches before returning to the circumferential plane.

The fracture analyses for circumferential cracks in pipe presume that the crack lies in the circumferential plane. In the Degraded Piping Program - Phase II, the out-of-plane crack growth has been addressed by projecting the real crack length onto the circumferential plane. However, it is not clear that this is the most appropriate method for treating the out-of-plane growth. Further, there may be a combination of service loadings that would favor the out-of-plane growth, making the existing fracture analysis methods non-conservative.

Subtask Approach. In assessing the effects of anisotropic materials character-istics, an analysis effort shall be initiated to examine the crack driving force as a function of angle from the pipe axis. This effort also shall examine the various combinations of anticipated service loadings to determine if there is a combination of loadings that could promote out-of-plane crack growth such that existing analysis procedures could become non-conservative. It is anticipated that a parametric study will be developed, comparing fracture toughness as a function of position to crack driving force as a function of postion. In addition, the usefulness of screening tests to predict out-of-plane crack growth will be assessed, with one application

being to piping without archival material.

A topical report shall be prepared describing the effects of anisotropic material characteristics, the work performed as part of this task, and the conclusions reached.

Depending on the outcome of the base program, the Government may exercise its unilateral option to require performance of the following work. The additional work would assess (separately) ductile crack growth resistance under mixed mode loading, and refine engineering estimation schemes for pipes with out-of-plane crack growth. (The optional tasks are designated in the contractor's technical proposal as subtask 3.2.4 and subtask 3.2.5. and are priced separately in section B of the contract. The Government may exercise the option for performance of either task or both tasks.)

TASK 4.0 - INTERNATIONAL COOPERATION AND PROGRAM MANAGEMENT

Task Objective. The objective of this task is to provide a mechanism for continuing the series of national and international technical exchange meetings and seminars, and to define the contractor program administration responsibilities.

Task Rationale. As part of the Degraded Piping Program - Phase II, several national and international meetings were organized to examine specific aspects of pipe fracture analysis. Most of these meetings were held in conjunction with the annual ASME Pressure Vessel and Piping meeting. However, other specialists' meetings also were organized. These meetings provided an excellent forum for technical exchange and enhanced the NRC-funded research program, providing a low-cost approach to obtaining detailed technical information to supplement the research.

In large, multi-disciplinary research programs, there is need for central coordination and program administration. Past research efforts suggest that it is effective for program administration costs -- report preparation costs, travel costs, etc. -- to be accumulated in one subtask. This provides a clear accounting of these costs, making it easier for the NRC to monitor the program progress and expenditure rates.

Task Approach. Two subtasks shall be established -- one for national and international technical exchange meetings and one for program administration.

Subtask 4.1 Technical Exchange Meetings

Subtask Objective. The objective of this subtask is to organize national and international meetings to promote technical exchange in the general area of piping integrity research.

Subtask Approach. The contractor shall organize and participate in national and international meetings on subjects pertaining to

piping integrity including meetings of ASME Section XI and ASTM. To the extent feasible, these meetings shall be held in conjunction with other national and international technical meetings such as the annual ASME Pressure Vessel and Piping meeting. The contractor shall be responsible for assembling the proceedings of these meetings and publishing them as a NUREG/CP report. For planning purposes, one meeting per year shall be organized. Assume meetings are one week in duration. The contractor shall also participate in the activities of the joint Japanese/ USNRC EPI program, implementing the results of that program as appropriate.

Subtask 4.2 Program Administration

Subtask Objective. The objective of this subtask is to provide a central effort for coordinating overall program administration and accumulating the associated costs.

Subtask Approach. The contractor shall be responsible for managing the program in all areas. However, management of the program shall be separated into two categories:

(1) Management of research tasks, and

(2) Program Administration.

The contractor shall establish guidelines for assigning a management activity to one of these two categories. Cost accounting procedures shall be implemented so that the management costs for a particular subtask can be associated with the other costs for that subtask.

This subtask specifically relates to the Program Administration management category. Examples of management activities that are to be in this category include the following:

- Preparation of the monthly business letter reports and distribution of those reports,
- Preparation of the semi-annual progress reports, and NRC Branch Contractor Reports,
- Participation in periodic ACRS and NRC project review meetings, and
- Answering general program questions and coordinating visits of NRC staff and management to the contractor's site.

C.1.6 References.

(1) G.M. Wilkowski and others, Battelle Columbus Laboratories, "Degraded Piping Program - Phase II, Semiannual Report, March 1984 - September 1984," USNRC Report NUREG/CR-4082, Vol. 1, January 1985.

(2) G.M. Wilkowski and others, Battelle Columbus Laboratories, "Degraded Piping Program - Phase II, Semiannual Report, October 1984 - March 1985," NSNRC Report NUREG/CR-4082, Vol. 2, July 1985.

(3) G.M. Wilkowski and others, Battelle Columbus Laboratories, "Degraded Piping Program - Phase II, Semiannual Report, April 1985 - September 1985," USNRC Report NUREG/CR-4082, Vol. 3, March 1986.

(4) G.M. Wilkowski and others, Battelle Columbus Laboratories, "Degraded Piping Program - Phase II, Semiannual Report, October 1985 - March 1986," USNRC Report NUREG/CR-4082, Vol. 4, September 1986.

(5) G.M. Wilkowski and others, Battelle Columbus Laboratories, "Degraded Piping Program - Phase II, Semiannual Report, April 1986 - September 1986," USNRC Report NUREG/CR-4082, Vol. 5, April 1987.

(6) G.M. Wilkowski and others, Battelle Columbus Laboratories, "Degraded Piping Program - Phase II, Sixth Program Report, October 1986 -September 1987," USNRC Report NUREG/CR-4082, Vol. 6, April 1988.

(7) G.M. Wilkowski and others, Battelle Columbus Laboratories, "Degraded Piping Program - Phase II, Seventh Program Report, October 1987 -December 1988," USNRC Report NUREG/CR-4082, Vol. 7, March 1989.

(8) G.M. Wilkowski and others, Battelle Columbus Laboratories, "Degraded Piping Program - Phase II, Final Report, March 1984 - January 1989," USNRC Report NUREG/CR-4082, Vol. 8, March 1989.

(9) American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, 1986.

(10) O.K. Chopra and H.M. Chung, Argonne National Laboratory, "Long-Term Embrittlement of Cast Duplex Stainless Steels in LWR Systems: Semiannual Report, October 1986 - March 1987," USNRC Report NUREG/CR-4744, Vol. 2, No. 1, July 1987.

C.2 Meetings and Travel

Prior to any trip taken during the period of performance under this contract, the Contractor shall obtain verbal or written approval of the NRC Project Officer for the trip and for the number of Contractor personnel attending.

C.2.1 Orientation Meeting

The NRC Project Officer and any other NRC staff at the NRC Project Officer's discretion, will travel to the Contractor's facilties to

meet with the key personnel under this contract for a one-day orientation ("kickoff") meeting within 30 days after execution of this contract.

C.2.2 Project Review Meetings

The NRC Project Officer and any other NRC staff at the NRC Project Officer's discretion, will travel to the Contractor's facilities to meet with the key personnel under this contract for a two-day project review meeting twice during each contract year.

In addition to these meetings with the Project Officer, the Contractor shall be required to attend and participate in various project review meetings with the NRC management, the Advisory Committee on Reactor Safeguards, and other NRC sponsored review groups. For planning purposes, the Contractor should anticipate two meetings per year, each meeting lasting three days, and held at the NRC's offices in Rockville, Maryland.

C.2.3 National Codes and Standards Meetings

The Contractor shall designate appropriate personnel to attend the meetings of the ASME Section XI Working Group on Flaw Evaluation and the ASTM Committee E-24 on Fracture Testing. The ASME Section XI Working Group on Flaw Evaluation meets four (4) times per year. The meeting locations vary but are always held in the United States. The ASTM Committee E-24 meets two (2) times per year, and those meeting locations also vary but are in the United States. It is anticipated that each meeting will last three days.

C.3 Quality Assurance (QA) Manual

All work performed under this contract shall be in accordance with an NRC accepted QA manual. At a minimum, the QA manual shall contain the following:

(1) Review and approval of purchase orders.
(2) Control and release of engineering drawings.
(3) Control and release of materials.
(4) Calibration of test and measurement equipment.
(5) Verification, control, and release of computer software.
(6) Personnel qualification.
(7) Receiving inspection.
(8) Quality assurance from outside vendors and subcontractors.
(9) Quality assurance program organization, authority, and responsibility.

C.4 Packaging and Marking

The Contractor shall use standard commercial packaging for all reports to be delivered. On the front of the package, the Contractor shall clearly identify the contract number under which the report is being provided.

C.5 Reports, Documentation and Other Deliverable End Items

The reports listed below and those listed in section F. herein are to be prepared in accordance with NRC Manual Chapter 3202 (Attachment 2). The Contractor shall also comply with Attachment 1 to NRC Manual Chapter 0904 "NRC Computer Software Policy" (Attachment 3) to this contract for implementation of Subtask 2.4 "Changes to NRCPIPE Computer Code" in the Statement of Work herein.

C.5.1 Topical Reports

The Contractor shall provide topical reports as discussed in Section C.1.5. The reports shall include a description of all findings and have sufficient discussions, references, and supporting data so that the conclusions can be evaluated by the NRC. The Contractor shall provide the NRC Project Officer a copy of the reports with original photographs and good quality drawings, sketches, and graphs.

C.5.2 Semi-Annual Progress Reports

The Contractor shall prepare semi-annual progress reports, describing the overall program, the work performed during the reporting period, and the results of the research. The report shall be submitted to the Project Officer within 90 days after the end of the reporting period.

C.5.3 Branch Contractors Annual Report

The Contractor shall prepare input to the Materials Engineering Branch Contractors Annual Report, NUREG-0975. The material shall be submitted to the Project Officer by January 31 of each calendar year, and shall reflect research accomplishments during the preceding Government fiscal year (October 1 to September 30).

(End of Clause)

C.2 TRAVEL APPROVALS (MAR 1987)

a. All domestic travel requires the prior approval of the Project Officer.

b. All foreign travel must be approved in advance by the NRC on NRC Form 445 and shall be in compliance with 52.247-63 Preference For U.S. Flag Air Carriers. Such approval will be communicated in writing through the Contracting Officer.

(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 produact is being provided.

(End of Clause)

SECTION E - INSPECTION AND ACCEPTANCE

E.1 NOTICE LISTING CONTRACT CLAUSES INCORPORATED BY REFERENCE

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

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

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

SECTION F - DELIVERIES OR PERFORMANCE

F.1 NOTICE LISTING CONTRACT CLAUSES INCORPORATED BY REFERENCE

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

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

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

F.2 PREPARATION OF TECHNICAL REPORTS (JUNE 1988)

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 NRC Manual Chapter 3202. NRC Manual Chapter 3202 is not applicable to any Contractor Spending Plan (CSP) and any Financial Status Report that may be included in this contract. (See Section J for List of Attachments).

(End of Clause)

F.3 TECHNICAL PROGRESS REPORT (JUNE 1988) (OMB CLEARANCE NUMBER 3150-0112)

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 shall identify the title of the project, the contract number, project manager and/or principal investigator, the contract period of performance, and the period covered by the report. Each report shall include the following for each discrete task:

a. A listing of the efforts completed during the period; 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.4 FINANCIAL STATUS REPORT (JUNE 1988)
(OMB CLEARANCE NUMBER 3150-0112)

The Contractor shall provide a monthly Financial Status Report to the Project Officer and the Contracting Officer. The report is due within 15 calendar days after the end of the report period and shall identify the title of the project, the contract number, project manager and/or principal investigator, the contract period of performance, and the period covered by the report. Each report shall include the following for each discrete task:

a. Provide total estimated cost (value) of the project as reflected in the contract, the amount of funds available in the contract to date, and the balance of funds required to complete the work as follows:

1) Total Estimated Contract Amount.
2) Total Funds Obligated To Date.
3) Total Costs Incurred This Reporting Period.
4) Total Costs Incurred To Date.
5) Balance of Obligations Remaining.
6) Balance of Funds Required To Complete Contract.

b. Detail of all direct and indirect costs incurred during the reporting period for each task.

c. Update the approved Contractor Spending Plan (CSP) if required under this contract. If there have been no changes to the projections, a certification to that effect may be provided with the Financial Status Report in lieu of the CSP.

(End of Clause)

F.5 PLACE OF DELIVERY--REPORTS (JUNE 1988)

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

a. Project Officer (3 copies)

U.S. Nuclear Regulatory Commission
Division of Engineering
M.S. NLS-217C
Office of Nuclear Regulatory Research
Washington, DC 20555

b. Contracting Officer (1 copy)

U.S. Nuclear Regulatory Commission
Contract Number: NRC-04-90-069
Division of Contracts and Property Management

Contract Administration Branch
Washington, D.C. 20555

(End of Clause)

F.6 DURATION OF CONTRACT PERIOD (MAR 1987)

This contract shall commence on 03/23/90 and will expire on 03/23/94.

(End of Clause)

SECTION G - CONTRACT ADMINISTRATION DATA

G.1 INDIRECT COST RATES (JUNE 1988)

a. Pending the establishment of final indirect rates which shall be negotiated based on audit of actual costs, the Contractor shall be reimbursed for allowable indirect costs as follows:

CATEGORY	RATE	COST BASE	APPLICABLE PERIOD
General Overhead Onsite	88%	Direct Labor	contract period
Research Department Burden	34%	Direct Labor, excluding service center labor	contract period

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

(End of Clause)

G.2 PROJECT OFFICER AUTHORITY (JUNE 1988)

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

Name: Michael Mayfield

Address: U.S. Nuclear Regulatory Commission
Division of Engineering
Office of Nuclear Regulatory Research
Washington, DC 20555

Telephone Number: 301-492-3844

b. Performance of the work under this contract shall be subject to the technical direction of the NRC Project Officer. The

term "Technical Direction" is defined to include the following:

1) Technical direction to the Contractor which shifts work emphasis between areas of work or tasks, fills in details or otherwise serves to accomplish the contractual statement of work.

2) Provide advice and guidance to the Contractor in the preparation of drawings, specifications or technical portions of the work description.

3) Review and, where required by the contract, approval of technical reports, drawings, specifications and technical information to be delivered by the Contractor to the Government under the contract.

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

1) Constitutes an assignment of additional work outside the general scope of the contract.

2) Constitutes a change as defined in the "Changes" clause of this contract.

3) In any way causes an increase or decrease in the total estimated contract cost, the fixed fee, if any, or the time required for contract performance.

4) Changes any of the expressed terms, conditions or specifications of the contract.

5) Terminates the contract, settles any claim or dispute arising under the contract, or issues any unilateral directive whatever.

d. All technical directions shall be issued in writing by the Project Officer or shall be confirmed by such person in writing within ten (10) working days after verbal issuance. A copy of said written direction shall be furnished to the Contracting Officer.

e. The Contractor shall proceed promptly with the performance of technical directions duly issued by the Project Officer in the manner prescribed by this clause and within such person's authority under the provisions of this clause.

f. If, in the opinion of the Contractor, any instruction or direction issued by the Project Officer is within one of the categories as defined in c above, the Contractor shall not proceed but shall notify the Contracting Officer in writing within five (5) working days after the receipt of any such instruction or direction and shall request the Contracting Officer to modify the contract accordingly. Upon receiving such notification from the Contractor, the Contracting Officer shall issue an appropriate contract modification or advise the Contractor in writing that, in the

Contracting Officer's opinion, the technical direction is within the scope of this article and does not constitute a change under the Changes Clause.

g. Any unauthorized commitment or direction issued by the Project Officer may result in an unnecessary delay in the Contractor's performance and may even result in the Contractor expending funds for unallowable costs under the contract.

h. A failure of the parties to agree upon the nature of the instruction or direction or upon the contract action to be taken with respect thereto shall be subject to 52.233-1 - Disputes.

i. In addition to providing technical direction as defined above, the Project Officer is responsible for:

1) Monitoring the Contractor's technical progress, including surveillance and assessment of performance, and recommending to the Contracting Officer changes in requirements.

2) Assisting the Contractor in the resolution of technical problems encountered during performance.

3) Reviewing all costs requested for reimbursement by the Contractor and submitting to the Contracting Officer recommendations for approval, disapproval, or suspension of payment for supplies and services required under this contract.

(End of Clause)

G.3 TRAVEL REIMBURSEMENT (JUNE 1988) ALTERNATE I (JUNE 1988)

a. The Contractor is encouraged to use Government contract airlines, AMTRAK rail service, and discount hotel/motel properties in order to reduce the cost of travel under this contract. The Contracting Officer will, upon request, provide each additional traveler with a letter of identification which is required in order to participate in this program. The Federal Travel Directory (FTD) identifies carriers, contract fares, schedules, payment conditions, and hotel/motel properties which offer their services and rates to Government contractor personnel traveling on official business under this contract. The FTD, which is issued monthly, may be purchased from the U.S. Government Printing Office, Washinyton, DC 20402.

b. The Contractor will be reimbursed for reasonable domestic travel costs incurred directly and specifically in the performance of this contract. The cost limitations for travel costs are determined by the Federal Travel Regulations that are in effect on the date of the trip. These Regulations specify the daily maximum per diem rates for specific localities within the Conterminous United States (CONUS), the standard CONUS rate, the allowance for meals and incidental expenses (M&IE), the cost of travel by privately owned automobile, and the items which require receipts. A copy of the Regulations may be obtained from the Superintendent of Documents, Government Printing Office, Washington, DC 20402.

c. When the Government changes the Federal Travel Regulations, it is the responsibility of the Contractor to notify the Contracting Officer in accordance with the Limitation of Cost clause of this contract if the Contractor will be unable to make all of the approved trips and remain within the cost and fee limitations of this contract due to the changes.

d. The rates for foreign travel are established by the U.S. Department of State and are listed in a publication entitled "Maximum Travel Per Diem Allowances For Foreign Areas". Copies of this publication may be obtained from the U.S. Government Printing Office, Washington, D.C. 20402.

(End of Clause)

SECTION H - SPECIAL CONTRACT REQUIREMENTS

H.1 KEY PERSONNEL (MAR 1987)

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

Dr. G. Wilkowski
Dr. P. Krishnaswamy
Dr. C. Marschall
Mr. P. Vieth

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

b. If one or more of the key personnel for whatever reason becomes, or is expected to become, unavailable for work under this contract for a continuous period exceeding 30 work days, or is expected to devote substantially less effort to the work than indicated in the proposal or initially anticipated, the Contractor shall immediately notify the Contracting Officer and shall, subject to the concurrence of the Contracting Officer, promptly replace such personnel with personnel of at least substantially equal ability and qualifications.

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

d. If the Contracting Officer determines that:

1) Suitable and timely replacement of key personnel who have been reassigned, terminated or have otherwise become unavailable for the contract work is not reasonably forthcoming; or

2) That the resultant reduction of effort would be so substantial as to impair the successful completion of the contract or the service order, the contract may be terminated by the Contracting Officer for default or for the convenience of the Government, as appropriate. If the Contracting Officer finds the Contractor at fault for the condition, the contract price or fixed fee may be equitably adjusted downward to compensate the Government for any resultant delay, loss or damage.

(End of Clause)

H.2 SAFETY, HEALTH, AND FIRE PROTECTION (MAR 1987)

The Contractor shall take all reasonable precautions in the performance of the work under this contract to protect the health and safety of employees and of members of the public and to minimize danger from all hazards to life and property and shall comply with all applicable health, safety, and fire protection regulations and requirements (including reporting requirements) of the Commission and the Department of Labor. In the event that the Contractor fails to comply with these regulations or requirements, the Contracting Officer, may, without prejudice to any other legal or contractual rights of the Commission, issue an order stopping all or any part of the work; thereafter, a start order for resumption of work may be issued at the discretion of the Contracting Officer. The Contractor shall make no claim for an extension of time or for compensation or damages by reason of or in connection with such work stoppage.

(End of Clause)

H.3 DISSEMINATION OF CONTRACT INFORMATION (MAR 1987)

The Contractor shall comply with the requirements of the attached NRC Manual Chapters 3202 and 3206 (See Section J for List of Attachments) regarding publications or dissemination to the public of any information, oral or written, concerning the work performed under this contract. Failure to comply with this clause shall be grounds for termination of this contract.

(End of Clause)

H.4 PRIVATE USE OF CONTRACT INFORMATION AND DATA (JUNE 1988)

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

(End of Clause)

H.5 DRAWINGS, DESIGNS, AND SPECIFICATIONS (JUN 1988)

All drawings, sketches, designs, design data, specifications, notebooks, technical and scientific data, and all photographs, negatives, reports, findings, recommendations, data and memoranda of every description relating thereto, as well as all copies of the foregoing relating to the work or any part thereto, are subject to inspection by the Commission at all reasonable times (for which inspection the proper facilities must be afforded the Commission by the Contractor and its subcontractors), are the property of the Government and may be used by the Government for any purpose whatsoever without any claim on the part of the Contractor and its subcontractors and vendors for additional compensation and must,

subject to the right of the Contractor to retain a copy of the material for its own use, be delivered to the Government, or otherwise disposed of by the Contractor either as the Contracting Officer may from time to time direct during the progress of the work or in any event as the Contracting Officer shall direct upon completion or termination of this contract. The Contractor's right of retention and use is subject to the security, patent, and use of information provisions, if any, of this contract.

(End of Clause)

H.6 ORGANIZATIONAL CONFLICTS OF INTEREST
(OMB CLEARANCE NUMBER 3150-0112) (JUNE 1988)

a. Purpose. The primary purpose of this clause is to aid in ensuring that the Contractor:

1) Is not placed in a conflicting role because of current or planned interests (financial, contractual, organizational, or otherwise) which relate to the work under this contract, and

2) Does not obtain an unfair competitive advantage over other parties by virtue of its performance of this contract.

b. Scope. The restrictions described apply to performance or participation by the Contractor as defined in 41 CFR 20-1.5402(f) in the activities covered by this clause.

c. Work for others. Notwithstanding any other provision of this contract, during the term of this contract, the Contractor agrees to forgo entering into consulting or other contractual arrangements with any firm or organization, the result of which may give rise to a conflict of interest with respect to the work being performed under this contract. The Contractor shall ensure that all employees under this contract abide by the provision of this clause. If the Contractor believes with respect to itself or any employee that any proposed consultant or other contractual arrangement with any firm or organization may involve a potential conflict of interest, the Contractor shall obtain the written approval of the Contracting Officer prior to execution of such contractual arrangement.

d. Disclosure after award.

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

2) The Contractor agrees that, if after award, it discovers organizational conflicts of interest with respect to this contract, it shall make an immediate and full disclosure in writing to the Contracting Officer. This statement must include a description of the action which the Contractor has taken or proposes to take to avoid or mitigate such conflicts. The NRC may, however, terminate

the contract if termination is in the best interest of the Government.

e. Access to and use of information.

1) If the Contractor in the performance of this contract obtains access to information, such as NRC plans, policies, reports, studies, financial plans, internal data protected by the Privacy Act of 1974 (Pub. L. 93-579), or data which has not been released to the public, the Contractor agrees not to:

(i) Use this information for any private purpose until the information has been released to the public;

(ii) Compete for work for the Commission based on the information for a period of six (6) months after either the completion of this contract or the release of the information to the public, whichever is first;

(iii) Submit an unsolicited proposal to the Government based on the information until one year after the release of the information to the public, or

(iv) Release the information without prior written approval by the Contracting Officer unless the information has previously been released to the public by the NRC.

2) In addition, the Contractor agrees that to the extent it receives or is given access to proprietary data, data protected by the Privacy Act of 1974 (Pub. L. 93-579), or other confidential or privileged technical, business, or financial information under this contract, the Contractor shall treat the information in accordance with restrictions placed on use of the information.

3) The Contractor shall have, subject to patent and security provisions of this contract, the right to use technical data it produces under this contract for private purposes provided that all requirements of this contract have been met.

f. Subcontracts. Except as provided in 41 CFR 20-1.5402(h), the Contractor shall include this clause, including this paragraph, in subcontracts of any tier. The terms "contract," "Contractor," and "Contracting Officer," must be appropriately modified to preserve the Government's rights.

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

h. Waiver. A request for waiver under this clause must be directed in writing through the Contracting Officer to the Executive

Director for Operations (EDO) in accordance with the procedures outlined in 41 CFR 20-1.5411.

(End of Clause)

H.7 GOVERNMENT FURNISHED EQUIPMENT/PROPERTY

The Government shall not provide any equipment/property under this contract except the experimental material under Subtask 1.3 and the computer code material under Subtask 2.4 of the Statement of Work herein. (End of Clause)

PART II - CONTRACT CLAUSES

SECTION I - CONTRACT CLAUSES

I.1 NOTICE LISTING CONTRACT CLAUSES INCORPORATED BY REFERENCE

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

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

NUMBER	DATE	TITLE
52.202-1	APR 1984	DEFINITIONS
52.203-1	APR 1984	OFFICIALS NOT TO BENEFIT
52.203-3	APR 1984	GRATUITIES
52.203-5	APR 1984	COVENANT AGAINST CONTINGENT FEES
52.203-6	JUL 1985	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT
52.203-7	OCT 1988	ANTI-KICKBACK PROCEDURES
52.209-6	MAY 1989	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT
52.215-1	APR 1984	EXAMINATION OF RECORDS BY COMPTROLLER GENERAL
52.215-2	DEC 1989	AUDIT -- NEGOTIATION
52.215-33	JAN 1986	ORDER OF PRECEDENCE
52.216-7	APR 1984	ALLOWABLE COST AND PAYMENT
52.216-8	APR 1984	FIXED FEE
52.219-8	FEB 1990	UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL DISADVANTAGED BUSINESS CONCERNS
52.219-9	AUG 1989	SMALL BUSINESS AND SMALL DISADVANTAGED BUSINESS SUBCONTRACTING PLAN
52.219-13	AUG 1986	UTILIZATION OF WOMEN-OWNED SMALL BUSINESSES
52.219-16	AUG 1989	LIQUIDATED DAMAGES - SMALL BUSINESS SUBCONTRACTING PLAN
52.220-3	APR 1984	UTILIZATION OF LABOR SURPLUS AREA CONCERNS
52.220-4	APR 1984	LABOR SURPLUS AREA SUBCONTRACTING PROGRAM
52.222-3	APR 1984	CONVICT LABOR
52.222-26	APR 1984	EQUAL OPPORTUNITY
52.222-28	APR 1984	EQUAL OPPORTUNITY PREAWARD

		CLEARANCE OF SUBCONTRACTS
52.222-35	APR 1984	AFFIRMATIVE ACTION FOR SPECIAL DISABLED AND VIETNAM ERA VETERANS
52.222-36	APR 1984	AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS
52.222-37	JAN 1988	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA
52.223-2	APR 1984	CLEAN AIR AND WATER
52.225-13	MAY 1989	RESTRICTIONS ON CONTRACTING WITH SANCTIONED PERSONS
52.227-1	APR 1984	AUTHORIZATION AND CONSENT ALTERNATE I (APR 1984)
52.227-2	APR 1984	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT
52.228-7	APR 1984	INSURANCE -- LIABILITY TO THIRD PERSONS
52.230-3	SEP 1987	COST ACCOUNTING STANDARDS
52.230-4	SEP 1987	ADMINISTRATION OF COST ACCOUNTING STANDARDS
52.232-17	APR 1984	INTEREST
52.232-22	APR 1984	LIMITATION OF FUNDS
52.232-23	JAN 1986	ASSIGNMENT OF CLAIMS
52.233-1	APR 1984	DISPUTES
52.233-3	AUG 1989	PROTEST AFTER AWARD ALTERNATE I (JUN 1985)
52.242-1	APR 1984	NOTICE OF INTENT TO DISALLOW COSTS
52.243-2	AUG 1987	CHANGES -- COST-REIMBURSEMENT ALTERNATE V (APR 1984)
52.244-2	JUL 1985	SUBCONTRACTS (COST-REIMBURSEMENT AND LETTER CONTRACTS)
52.244-5	APR 1984	COMPETITION IN SUBCONTRACTING
52.249-6	MAY 1986	TERMINATION (COST-REIMBURSEMENT)
52.249-9	APR 1984	DEFAULT (FIXED PRICE RESEARCH AND DEVELOPMENT)
52.249-14	APR 1984	EXCUSABLE DELAYS
52.251-1	APR 1984	GOVERNMENT SUPPLY SOURCES
52.227-12	JUN 1989	PATENT RIGHTS-RETENTION BY THE CONTRACTOR (LONG FORM)

I.2 PAYMENT FOR OVERTIME PREMIUMS
(FAR 52.222-2) (APR 1984)

(a) The use of overtime is authorized under this contract if the overtime premium cost does not exceed $0. In addition to this dollar ceiling, overtime is permitted only for work--

(1) Necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdowns of production equipment, or occasional production bottlenecks of a sporadic nature;

(2) By indirect-labor employees such as those performing duties

in connection with administration, protection, transportation, maintenance, standby plant protection, operation of utilities, or accounting;

(3) To perform tests, industrial processes, laboratory procedures, loading or unloading of transportation conveyances, and operations in flight or afloat that are continuous in nature and cannot reasonably be interrupted or completed otherwise; or

(4) That will result in lower overall costs to the Government.

(b) Any request for estimated overtime premiums that exceeds the amount specified above shall include all estimated overtime for contract completion and shall--

(1) Identify the work unit; e.g., department or section in which the requested overtime will be used, together with present workload, staffing, and other data of the affected unit sufficient to permit the Contracting Officer to evaluate the necessity for the overtime;

(2) Demonstrate the effect that denial of the request will have on the contract delivery or performance schedule;

(3) Identify the extent to which approval of overtime would affect the performance or payments in connection with other Government contracts, together with identification of each affected contract; and

(4) Provide reasons why the required work cannot be performed by using multishift operations or by employing additional personnel.

(End of Clause)

I.3 DRUG-FREE WORKPLACE (FAR 52.223-6)
(MAR 1989)

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

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

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

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

"Employee" means an employee of a Contractor directly engaged in the performance of work under a Government contract.

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

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

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

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

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

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

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

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

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

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

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

(ii) Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after such conviction.

(5) Notify the contracting officer within ten (10) days after receiving notice under subdivision (b)(4)(ii) of this clause, from an employee or otherwise receiving actual notice of such conviction;

(6) Within 30 days after receiving notice under subparagraph (b)(4)(ii) of this clause of a conviction, impose the following sanctions or remedial measures on any employee who is convicted of drug abuse violations occurring in the workplace:

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

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

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

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

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

(End of Clause)

I.4 PROMPT PAYMENT (FAR 52.232-25) (APR 1989)

Notwithstanding any other payment clause in this contract, the Government will make invoice payments and contract financing payments under the terms and conditions specified in this clause. Payment shall be considered as being made on the day a check is dated or an electronic funds transfer is made. Definitions of pertinent terms are set forth in 32.902. All days referred to in this clause are calendar days, unless otherwise specified. The term "foreign vendor" means an incorporated concern not incorporated in the United States, or unincorporated concern having its principal place of business outside the United States.

(a) Invoice Payments.

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

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

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

(ii) The 30th day after Government acceptance of supplies delivered or services performed by the Contractor. On a final invoice where the payment amount is subject to contract settlement actions, acceptance shall be deemed to have occurred on the effective date of the contract settlement. However, if the designated billing office fails to annotate the invoice with the actual date of receipt, the invoice payment due date shall be deemed to be the 30th day after the date the Contractor's invoice is dated, provided a proper invoice is received and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

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

(i) The due date for meat and meat food products, as defined in section 2(a)(3) of the Packers and Stockyard Act of 1921 (7 U.S.C. 182(3)) and further defined in Pub. L. 98-181 to include any edible fresh or frozen poultry meat, any perishable poultry meat food product, fresh eggs, and any perishable egg product, will be as close as possible to, but not later than, the 7th day after product delivery.

(ii) The due date for perishable agricultural commodities, as defined in Section 1(4) of the Perishable Agricultural Commodities Act of 1930 (7 U.S.C. 499a(44)), will be as close as possible to, but not later than, the 10th day after product delivery, unless another date is specified in the contract.

(iii) The due date for dairy products, as defined in Section 111(e) of the Dairy Production Stabilization Act of 1983 (7 U.S.C 4502(e)), edible fats or oils, will be as close as possible to, but not later than, the 10th day after the date on which a proper invoice has been received.

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

(i) Name and address of the Contractor.

(ii) Invoice date.

(iii) Contract number or other authorization for supplies delivered or services performed (including order number and contract line item number).

(iv) Description, quantity, unit of measure, unit price, and extended price of supplies delivered or services performed.

(v) Shipping and payment terms (e.g., shipment number and date of shipment, prompt payment discount terms). Bill of lading number and weight of shipment will be shown for shipments on Government bills of lading.

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).

(vii) Name (where practicable), title, phone number and mailing address of person to be notified in event of a defective invoice.

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

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

(i) A proper invoice was received by the designated billing office.

(ii) A receiving report or other Government documentation authorizing payment was processed and there was no disagreement over quantity, quality, or contractor compliance with any contract term or condition.

(iii) In the case of a final invoice for any balance of funds due the Contractor for supplies delivered or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(6) The interest penalty shall be at the rate established by the Secretary of the Treasury under Section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) that is in effect on the day after the due date, except where the interest penalty is prescribed by other governmental authority. This rate is referred to as the "Renegotiation Board Interest Rate," and it is published in the Federal Register semiannually on or about January 1 and July 1. The interest penalty shall accrue daily on the invoice payment amount

approved by the Government and be compounded in 30-day increments inclusive from the first day after the due date through the payment date. That is, interest accrued at the end of any 30-day period will be added to the approved invoice payment amount and be subject to interest penalties if not paid in the succeeding 30-day period. If the designated billing office failed to notify the contractor of a defective invoice within the periods prescribed in subparagraph (a)(4) of this clause, then the due date on the corrected invoice will be adjusted by subtracting the number of days taken beyond the prescribed notification of defects period. Any interest penalty owed the Contractor will be based on this adjusted due date. Adjustments will be made by the designated payment office for errors in calculating interest penalties, if requested by the Contractor.

(i) For the sole purpose of computing an interest penalty that might be due the contractor, Government acceptance shall be deemed to have occurred constructively on the 30 day after the contractor delivered the supplies or performed the services in accordance with the terms and conditions of the contract, unless there is a disagreement over quantity, quality, or contractor compliance with a contract provision. In the event that actual acceptance occurs within the constructive acceptance period, the determination of an interest penalty shall be based on the actual date of acceptance. The constructive acceptance requirement does not, however, compel Government officials to accept supplies or services, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(ii) The following periods of time will not be included in the determination of an interest penalty:

(A) The period taken to notify the contractor of defects in invoices submitted to the Government, but this may not exceed 7 days (3 days for meat and meat food products and 5 days for perishable agricultural commodities, dairy products, edible fat or oils, and food products prepared from edible fats or oils).

(B) The period between the defects notice and resubmission of the corrected invoice by the Contractor.

(iii) Interest penalties will not continue to accrue after the filing of a claim for such penalties under the clause at 52.233-1, Disputes, or for more than 1 year. Interest penalties of less than $1.00 need not be paid.

(iv) Interest penalties are not required on payment delays due to disagreement between the Government and Contractor over the payment amount or other issues involving contract compliance or on amounts temporarily withheld or retained in accordance with the terms of the contract. Claims involving disputes, and any interest that may be payable, will be resolved in accordance with the clause at 52.233-1, Disputes.

(7) An interest penalty shall also be paid automatically by the designated payment office, without request from the contractor, if a

discount for prompt payment is taken improperly. The interest penalty will be calculated as described in subparagraph (a)(6) of this clause on the amount of discount taken for the period beginning with the first day after the end of the discount period through the date when the Contractor is paid.

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

(i) Is owed an interest penalty;

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

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

(b) Contract Financing Payments.

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

(2) For contracts that provide for contract financing, requests for payment shall be submitted to the designated billing office as specified in this contract or as directed by the Contracting Officer. Contract financing payments shall be made on the 30th day after receipt of a proper contract financing request by the designated billing office. In the event that an audit or other review of a specific financing request is required to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the due date specified.

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

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

(c) If this contract contains the clause at 52.213-1, Fast Payment Procedure, payments will be made within 15 days after the date of

receipt of the invoice.

(End of Clause)

I.5 ELECTRONIC FUNDS TRANSFER PAYMENT METHODS (FAR 52.232-28) (APR 1989)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(End of Clause)

I.6 CLAUSES INCORPORATED BY REFERENCE
(FAR 52.252-2) (JUN 1988)

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

(End of Clause)

I.7 LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS--(FAR 52.203-12) (JAN 1990)

(a) Definitions.

"Agency", as used in this clause, means executive agency as defined in 2.101.

"Covered Federal action," as used in this clause, means any of the following Federal actions:

(a) The awarding of any Federal contract.
(b) The making of any Federal grant.
(c) The making of any Federal loan.
(d) The entering into of any cooperative agreement.
(e) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

"Indian tribe" and "tribal organization," as used in this clause, have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) and include Alaskan Natives.

"Influencing or attempting to influence," as used in this

clause, means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

"Local government," as used in this clause, means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

"Officer or employee of an agency," as used in this clause, includes the following individuals who are employed by an agency:

(a) An individual who is appointed to a position in the Government under title 5, United States Code, including a position under a temporary appointment.

(b) A member of the uniformed services, as defined in subsection 101(3), title 37, United States Code.

(c) A special Government employee, as defined in section 202, title 18, United States Code.

(d) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, title 5, United States Code, appendix 2.

"Person," as used in this clause, means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit, or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Reasonable compensation," as used in this clause, means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

"Reasonable payment," as used in this clause, means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

"Recipient," as used in this clause, includes the Contractor and all subcontractors. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Regularly employed," as used in this clause, means, with respect to an officer or employee of a person requesting or receiving a Federal contract, an officer or employee who is employed by such person for at least 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

"State," as used in this clause, means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and a multi-State, regional, or interstate entity having governmental duties and powers.

(b) Prohibitions.

(1) Section 1352 of title 31, United States Code, among other things, prohibits a recipient of a Federal contract, grant, loan, or cooperative agreement from using appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

(2) The Act also requires Contractors to furnish a disclosure if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

(3) The prohibitions of the Act do not apply under the following conditions:

(i) Agency and legislative liaison by own employees.

(A) The prohibition on the use of appropriated funds, in paragraph (b)(1) of this clause, does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(B) For purposes of subdivision (b)(3)(i)(A) of this

clause, providing any information specifically requested by an agency or Congress is permitted at any time.

(C) The following agency and legislative liaison activities are permitted at any time where they are not related to a specific solicitation for any covered Federal action

(1) Discussing with an agency the qualities and characteristics (including individual demonstrations) of the person's products or services, conditions or terms of sale, and service capabilities.

(2) Technical discussions and other activities regarding the application or adaptation of the person's products or services for an agency's use.

(D) The following agency and legislative liaison activities are permitted where they are prior to formal solicitation of any covered Federal action--

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Pub. L. 95-507, and subsequent amendments.

(E) Only those activities expressly authorized by subdivision (b)(3)(i)(A) of this clause are permitted under this clause.

(ii) Professional and technical services.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of--

(1) A payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action, if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action.

(2) Any reasonable payment to a person other than an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action if the

payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action. Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(B) For purposes of subdivision (b)(3)(ii)(A) of this clause, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting of a legal document accompanying a bid or proposal by a lawyer is allowable.

Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(C) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation and any other requirements in the actual award documents.

(D) Only those services expressly authorized by subdivisions (b)(3)(ii)(A)(1) and (2) of this clause are permitted under this clause.

(E) The reporting requirements of FAR 3.803(a) shall not apply with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

(iii) Disclosure.

(A) The Contractor who requests or receives from an agency a Federal Contract shall file with that agency a disclosure form, OMB standard form LLL, Disclosure of Lobbying Activities, if such person has made or has agreed to make any payment using

nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under subparagraph (b)(1) of this clause, if paid for with appropriated funds.

(B) The Contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under subparagraph (c)(1) of this clause. An event that materially affects the accuracy of the information reported includes--

(1) A cumulative increase of $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

(3) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(C) The Contractor shall require the submittal of a certification, and if required, a disclosure form by any person who requests or received any subcontract exceeding $100,000 under the Federal contract.

(D) All subcontractor disclosure forms (but not certification) shall be forwarded from tier to tier until received by the prime Contractor. The prime Contractor shall submit all disclosures to the Contracting Officer at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding Contractor.

(iv) Agreement. The Contractor agrees not to make any payment prohibited by this clause.

(v) Penalties.

(A) Any person who makes an expenditure prohibited under paragraph (a) of this clause or who fails to file or amend the disclosure form to be filed or amended by paragraph (b) of this clause shall be subject to civil penalties as provided for by 31 U.S.C. 1352. An imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

(B) Contractors may rely without liability on the representation made by their subcontractors in the certification and disclosure form.

(vi) Cost allowability. Nothing in this clause makes allowable or reasonable any costs which would otherwise be unallowable or unreasonable. Conversely, costs made specifically

unallowable by the requirements in this clause will not be made allowable under any other provision.

(End of clause)

I.8 OPTION FOR PERFORMANCE OF ADDITIONAL TASKS

The Government may require the performance of any or all of the tasks identified in the Statement of Work, section C, as optional tasks at the total estimated costs and fees identified section B, the schedule. The Contracting Officer may exercise the options by written notice to the Contractor at any time during the effective period of the contract and may exercise the options separately or together as deemed appropriate.

(End of Clause)

PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

SECTION J - LIST OF ATTACHMENTS

J.1 ATTACHMENTS (MAR 1987)

Attachment Number	Title
1	Billing Instructions
2	NRC Contractor Organizational Conflicts of Interest (41 CFR Part 20)
3	NRC Manual Chapter 3202
4	Subcontracting Plan
5	NRC Manual Chapter 0904

REVISED 8/89

BILLING INSTRUCTIONS FOR COST-REIMBURSEMENT TYPE CONTRACTS

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

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

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

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

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

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

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

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

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

INSTRUCTIONS FOR PREPARING COST INFORMATION FOR NRC CONTRACTS

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

Official Agency Billing Office: Address the original and 3 copies of the voucher/invoice, together with supporting documentation attached to each copy to: U. S. Nuclear Regulatory Commission, Division of Contracts and Property Management, P-902, Washington, D. C. 20555.

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

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

(a) Contract Number. Insert the NRC contract number

Task Order Number, if applicable. Insert the task order number.

(b) Title of Project. List the full title of the project being performed under the contract.

(c) Sequential voucher/invoice number. The appropriate sequential number of the voucher/invoice, beginning with 001 should be designated. Contractors may also include individual internal accounting numbers, if desired, in addition to the 3-digit sequential number.

(d) Project Officer's name as designated in the contract.

(e) Date of voucher/invoice. Insert the date the voucher/invoice is prepared.

(f) Contract Amount. Insert the total estimated cost of the contract, exclusive of fixed-fee. Include this information as it applies to individual task orders as well.

(7) Travel. Domestic travel is travel within the United States, its territories, possessions, and Canada. It should be billed separately from foreign travel.

All costs associated with each trip must be shown in the following format:

Date		Traveler	Destination		Purpose	Cost
From	To		From	To		$

(8) Subcontracts. Include separate detailed breakdown of all costs paid to approved subcontractors during the billing period.

(9) Other. List all other direct costs by cost element and dollar amount separately.

(j) Indirect Costs - Overhead. Cite the formula (rate and base) in effect during the time the cost was incurred and for which reimbursement is claimed.

(k) Fixed Fee. If the contract provides for a fixed fee, it must be claimed as provided for by the contract. Cite the formula or method of computation. The contractor may bill for fixed fee only up to 85% of total fee.

(l) Amount Billed for Current Period. Insert the amount billed for the major cost elements, adjustments, and total amount for the period.

(m) Cumulative Amount from Inception to Date of Current Billing. Insert the cumulative amounts billed for the major cost elements and adjusted amounts claimed during this contract.

(n) Total Amounts Claimed. Insert the total amounts claimed for the current and cumulative periods.

(o) Adjustments. This includes cumulative amounts billed that have been suspended or disallowed.

(p) Grand Totals.

VOUCHERS FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

Official Agency Billing Office

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

Payee's Name and Address

Individual to Contact
Regarding This Voucher:
Name: _____
Tel. No.: _____

(a) Contract Number _____
Task Order No. (If Applicable) _____
(b) Title of Project _____
_____
_____
(c) Voucher Number _____
(d) Project Officer _____
(e) Date of Voucher _____
(f) Contract Amount _____
(g) Billing Period _____

(h) This voucher represents reimbursable costs from _____ thru _____

	Amount Billed	
	(l) Current Period	(m) Inception to Date
(i) Direct Costs		
(1) Direct Labor *		
(2) Fringe Benefits @ ___% (if computed as percentage)		
(3) Capitalized Nonexpendable Equipment *		
(4) Materials, Supplies and Noncapitalized Equipment *		
(5) Premium Pay		
(6) Consultants *		
(7) Travel - Domestic *		
Foreign *		
(8) Subcontract *		
(9) Other Costs *		
Total Direct Costs		
(j) INDIRECT COSTS		
A) Overhead ___% of _____ (Indicate Base)		
Subtotal		
B) General & Administrative Expense ___% of Cost Elements Nos. ___		
Total Costs		
(k) FIXED-FEE EARNED (Formula)		
(n) Total Amounts Claimed		
(o) Adjustments Outstanding Suspensions		
(p) Grand Totals		

* (REQUIRES SUPPORTING INFORMATION.)
(SEE ATTACHED.)

DC-3

VOUCHERS FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

Official Agency Billing Office:

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

Payee's Name and Address

ABC Corporation
100 Main Street
Anywhere, U.S.A.

The National Bank
Anywhere, U.S.A.
Assignee for ABC Corp.
Anywhere, U.S.A.
(When Payments Assigned)

Individual to Contact Regarding This Voucher:
Name: Harry Murphy
Tel. No.: 215-321-8654

(a) Contract Number NRC-10-81-624
Task Order No. (If Applicable) 002
(b) Title of Project "Study of Nuclear Waste Concepts"
(c) Voucher Number 003
(d) Project Officer
(e) Date of Voucher
(f) Contract Amount
(g) Billing Period

(h) This voucher represents reimbursable costs from 3/1/82 thru 3/30/82

		Amount Billed (l) Current Period	(m) Inception to Date
(i)	Direct Costs		
(1)	Direct Labor *	$2,400	$6,800
(2)	Fringe Benefits @16.5% (if computed as percentage)	600	1,200
(3)	Capitalized Nonexpendable Equipment *	5,000	8,000
(4)	Materials, Supplies and Noncapitalized Equipment *	2,000	4,000
(5)	Premium Pay	100	150
(6)	Consultants *	100	100
(7)	Travel - Domestic *	200	200
	Foreign *		
(8)	Subcontract *	200	200
(9)	Other Costs *	3,000	9,000
	Total Direct Costs	$13,600	$29,650
(j)	INDIRECT COSTS		
A)	Overhead 100% of Total Direct Costs (Indicate Base)	$13,600	$29,650
	Subtotal	$27,200	$59,300
B)	General & Administrative Expense 12 % of Cost Elements Nos. 1-9.A	3,264	6,450
	Total Costs	$30,464	$65,750
(k)	FIXED-FEE EARNED (Formula)	1,523	3,400
(n)	Total Amounts Claimed	$31,987	$69,150
(o)	Adjustments Outstanding Suspensions	1,700	1,700
(p)	Grand Totals	$30,287	$67,450

* (REQUIRES SUPPORTING INFORMATION.) (SEE ATTACHED.)

8) Subcontracts

XYZ CORP. (CPFF)

Direct Labor:	- 80 hours @ $20.00 per hour	=	$1600.00
O/H	@ 50%	=	$800.00
Travel - 2 Trips - Wash., DC to Boston, MA	@ $200	=	$400.00
Profit	@ 7%	=	$200.00
TOTAL:			$3000.00

(k) Fixed-Fee (Formula)

(5%)

$350,000 X 5% = $17,500 Total Fixed Fee for this Contract

$27,200 X 5% = $1360 Fee Billed for this Period

(o) Adjustments

$1700 - Indicates amount withheld from voucher #001, now approved by Contracting Officer letter 3/10/82.

SAMPLE

SUPPORTING INFORMATION

1) Direct Labor - $2400

Labor Category	Labor Hours Negotiated	Hours billed	Rate	Total	Cumulative Hours Billed
Senior Engineer I	2400	100	$14.00	$1400	975
Engineer	1500	50	$10.00	$500	465
Computer Analyst	700	100	$5.00	$500	320
				$2400	

3) Direct Equipment

Spectrometer - General Electric (as approved in Property Schedule) $5,000

4) Materials, Supplies & Other Expendable Items

10 Radon Tubes @ $110.00 = $1100.00

6 Pairs Electrostatic Gloves @ $150.00 = $900.00

$2000.00

5) Premium Pay

Walter Murphy - 10 hours @ $10.00 Per Hour = $100
(This was approved by NRC in letter dated 3/6/82.)

6) Consultants' Fee

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

7) Travel

Date		Traveler	Destination		Purpose	Costs
From	To		From	To		
3/1/82	3/6/82	William King	Chicago, Il	Wash., DC	Meeting with Project Officer	$200

PART 20-1 -- GENERAL

Subpart 20-1.54--Contractor Organizational Conflicts of Interest

Sec.

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

120-1.5401 Scope and Policy

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

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

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

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

§20-1.5402 Definitions

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

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

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

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

(e) "Contract" means any contract, agreement, or other arrangement with the NRC except as provided in Section 20-1.5401(c).

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

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

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

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

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

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

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

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

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

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

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

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

(2) The contracting officer may request specific information from an offeror or contractor or may require special contract provisions such as provided in §20-1.5405-2 in the following circumstances:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

§20-1.5404 Representation

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

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

ORGANIZATIONAL CONFLICTS OF INTEREST REPRESENTATION

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

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

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

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

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

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

§ 20-1.5405 Contract clauses

§ 20-1.5405-1 General contract clause

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

(a) Purpose. The primary purpose of this clause is to aid in ensuring that the contractor: (1) Is not placed in a conflicting role because of current or planned interest (financial, contractual, organizational or otherwise) which relate to the work under this contract, and (2) does not obtain an unfair competitive advantage over other parties by virtue of its performance of this contract.

(b) Scope. The restrictions described herein shall apply to performance or participation by the contractor as defined in 41 CFR § 20-1.5402(f) in the actitities covered by this clause.

(c) Work for others. Notwithstanding any other provision of this contract, during the term of this contract, the contractor agrees to forego entering into consulting or other contractual arrangements with any firm or organization, the result of which may give rise to a conflict of interest with respect to the work being performed under this contract. The contractor shall ensure that all employees who are employed full time under this contract and employees designated as key personnel, if any, under this contract abide by the provision of this clause. If the contractor believes with respect to itself or any such employee that any proposed consultant or other contractual arrangement with any firm or organization may involve a potential conflict of interest, the contractor shall obtain the written approval of the contracting officer prior to execution of such contractual arrangement.

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

(2) The contractor agrees that if after award it discovers organization conflicts of interest with respect to this contract, it shall make an immediate and full disclosure in writing to the contracting officer. This statement shall include a description of the action which the contractor has taken or proposes to take to avoid or mitigate such conflicts. The NRC may, however, terminate the contract for convenience if it deems such termination to be in the best interests of the government.

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

on such information for a period of six (6) months after either the completion of this contract or the release of such information to the public, whichever is first, (iii) submit an unsolicited proposal to the government based on such information until one year after the release of such information to the public, or (iv) release the information without prior written approval by the contracting officer unless such information has previously been released to the public by the NRC.'

(2) In addition, the contractor agrees that to the extent it receives or is given access to proprietary data, data protected by the Privacy Act of 1974 (Pub. L. 93-579), or other confidential or privileged technical, business, or financial information under this contract, the contractor shall treat such information in accordance with restrictions placed on use of the information.

(3) The contractor shall have, subject to patent and security provisions of this contract, the right to use technical data it produces under this contract for private purposes provided that all requirements of this contract have been met.

(f) Subcontracts. Except as provided in 41 CFR §20-1.5402(h), the contractor shall include this clause, including this paragraph, in subcontracts of any tier. The terms "contract," "contractor," and "contracting officer," shall be appropriately modified to preserve the government's rights.

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

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

§20-1.5405-2 Special contract provisions.

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

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

(2) Software exclusion clauses;

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

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

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

(i) Follow-on effort. (1) The contractor shall be ineligible to participate in NRC contracts, subcontracts, or proposals therefor (solicited or unsolicited) which stem directly from the contractor's performance of work under this contract. Furthermore, unless so directed in writing by the contracting officer, the contractor shall not perform any technical consulting or management support services work or evaluation activities under this contract on any of its products or services or the products or services of another firm if the contractor has been substantially involved in the development or marketing of such products or services.

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

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

§ 20-1.5406 Evaluation, findings, and contract award

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

(a) Disqualify the offeror from award,

(b) Avoid or eliminate such conflicts by appropriate measures; or

(c) Award the contract under the waiver provision of § 20-1.5411.

§ 20-1.5407 Conflicts identified after award.

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

§ 20-1.5408 (Reserved)

§ 20-1.5409 (Reserved)

§ 20-1.5410 Subcontracts

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

§ 20-1.5411 Waiver

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

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

820-1.5412 Remedies

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

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

For the Nuclear Regulatory Commission

Samuel J. Chilk
Secretary of the Commission

Form NRC-489
(1-76)

U. S. NUCLEAR REGULATORY COMMISSION
NRC MANUAL
TRANSMITTAL NOTICE

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

SUPERSEDED:	Number	Date	TRANSMITTED:	Number	Date
			TN	3200-21	
Chapter	NRC-3202	4/29/82	Chapter	NRC-3202	8/29/84
Page			Page		
Appendix	NRC-3202	4/29/82	Appendix	NRC-3202	8/29/84

REMARKS:

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

U.S. NUCLEAR REGULATORY COMMISSION
NRC MANUAL

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

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

3202-01 COVERAGE

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

3203-02 OBJECTIVES

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

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

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

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

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

3202-03 RESPONSIBILITIES AND AUTHORITIES

031 <u>The Director, Office of Administration</u>:

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

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b. periodically surveys report activities throughout NRC to ascertain that the provisions of this chapter are adequate and are being implemented; makes any changes needed.

032 The Director, Division of Technical Information and Document Control:

a. develops and administers a central report control system for identifying, printing and distributing contractor reports and responding to requests for unclassified reports.

b. develops and maintains guides and standards for the documentation, formatting, printing, dissemination, and public sale of unclassified contractor reports.

c. assures that a system exists for review of unclassified contractor reports for adherence to patent, copyright and disclosure policies prior to dissemination.

d. establishes and administers interagency agreements necessary for the dissemination and public sale of unclassified contractor reports and controls duplication and printing of contractor reports to assure adherence to the Government Printing and Binding Regulations issued by the Joint Committee on Printing (JCP), Congress of the United States.

e. in response to requests of Directors of Offices and Regional Administrators, establishes distribution data banks, maintains official standard distribution lists for automatic distribution of unclassified contractor reports, and controls distribution to assure adherence to the Government Printing and Binding Regulations, the Privacy Act, and the Freedom of Information Act.

033 Directors of Offices and Regional Administrators:

a. establish the contract or Standard Order for Work* provisions, including those required by this chapter and its appendix; Chapter NRC-3203, Distribution of Unclassified NRC Staff- and Contractor-Generated Documents and its appendix; Chapter NRC-0260, Printing, Copying, Graphics and Photography and its appendix; and Chapter NRC-1102, Procedures for Placement of Work with the Department of Energy. In the Statement of Work:

(1) specify what reports will be reviewed for policy, management, and legal issues by NRC staff in draft prior to printing and distribution. If the report is to be reviewed by NRC staff, give the conditions under which the contractor may publish documents in the event of unresolvable differences relative to the draft, including the type of disclaimer to be used in addition to the standard government disclaimer (see Exhibit 6).

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

(2) provide for the reviews necessary to insure that the national security, patent rights, copyrights, proprietary rights and rights in other sensitive unclassified information are not compromised by the release or dissemination of the reports. If DOE contractors are to be authorized to make the reviews, designate the contractor officials who are authorized to sign NRC Form 426A prior to NRC distribution of reports (see Appendix, Part IV). Assure that sensitive unclassified and classified reports are marked and handled properly (see Appendix, Part V).

(3) specify that all formal reports carry NUREG/CR or NUREG/CP numbers as the prime identification, as illustrated in the appendix.

(4) specify whether formal reports shall be printed by NRC or the contractor if the contractor has a JCP-authorized federal printing plant (see Appendix, Parts II and IV).

(5) specify that all formal reports required by NRC shall be distributed by NRC.

(6) establish the number of copies the contractor may retain or request for internal and external distribution and charge against NRC. Written justification must be provided, and approval obtained of the NRC JCP representative (the Director, Division of Technical Information and Document Control) when the number exceeds the 50 copies authorized by JCP for unclassified reports.

(7) assure the protection of classified and sensitive unclassified information, if any, in contractor reports (see Appendix, Part V).

b. assure adherence to instructions and authorizations regarding the reproduction and distribution of reports.

c. recommend standard distribution category(ies) for contractor reports to the Division of Technical Information and Document Control.

d. provide changes to the official standard distribution lists to the Division of Technical Information and Document Control.

e. establish procedures for review of contractor's proposed press and other media releases.

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

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

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036 The Director, Division of Security:

a. administers the overall information security program which includes management of the security classification program and other programs for the protection of sensitive unclassified information.

b. advises staff of NRC Offices and Regions on the preparation and handling of reports containing classified, proprietary and other sensitive unclassified information.

037 The Director, Division of Contracts:

a. coordinates the flow of all reports to and from contractors (other than DOE contractors) where such reports may result in alterations in the terms and conditions of applicable contracts as they pertain to report production and distribution.

b. advises the contractor as to the source and method for obtaining reports required from the government for performance of the contract.

c. provides contractor with copies of NRC Chapters 0260, 3202, 3203, 3207, and 3210, when appropriate.

d. determines when requests for proposals and invitations for bids, as well as subsequent contracts, should include statements requiring contractor compliance with Chapters NRC-3202, 3207, and 3210 and the Government Printing and Binding Regulations.

e. ensures that appropriate clauses are included in contracts regarding the private use and protection of classified, proprietary and other sensitive unclassified information.

3202-04 DEFINITIONS*

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

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

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

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*Words underscored in definitions are also defined in list.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3202-05 BASIC REQUIREMENTS

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

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

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

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054 Preparation Requirements

a. Reports to be Printed by NRC. All contractor reports to be printed by NRC shall be prepared according to Appendix 3202. The reproducible masters for the requisite distribution shall be transmitted to the Division of Technical Information and Document Control accompanied by completed NRC Form 426A and NRC Form 335.

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

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

a. Chapter NRC-0260, "Printing, Copying, Graphics and Photography."

b. Chapter and Appendix NRC-2101, "NRC Security Program."

c. Chapter NRC-3203, "Distribution of Unclassified NRC Staff- and Contractor-Generated Documents."

d. Chapter NRC-1102, "Procedures for Placement of Work with the Department of Energy."

e. Chapter NRC-3206, "NRC Contractor Speeches, Papers and Journal Articles on Regulatory and Technical Subjects."

f. Chapter NRC-3207, "Conferences and Conference Proceedings."

g. Title 44, U.S. Code, "Public Printing and Documents," Government Printing Office.

h. Government Printing and Binding Regulations of the Joint Committee on Printing, Congress of the United States, No. 24, April 1977 (JCP Regulations), Government Printing Office.

i. Title 5, U.S. Code, "Government Organization and Employees," Government Printing Office.

j. "Technical Writing Style Guide," A. W. Savolainen et al., compilers, U.S. NRC Report NUREG-0650, November 1979, and Supplement 1, February 1982.

k. "Protection of Unclassified Safeguards Information," D. J. Kasun, USNRC Report NUREG-0794, October 1981.

l. Chapter NRC-0255, "Mail Management," and Appendix 0255, Part V, Annex A.

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

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EXHIBITS

PART I

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

A. LIST OF TECHNICAL REPORT REQUIREMENTS

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

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

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

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

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

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

B. REQUIREMENTS FOR FORMAL REPORTS

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

C. REQUIREMENTS FOR DRAFT REPORTS

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

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

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

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

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

D. PUBLISHING UNCLASSIFIED INFORMATION IN OPEN LITERATURE AND PRESENTING PAPERS

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

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

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

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

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

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

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

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

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

E. TYPOGRAPHY

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

F. REPORTS CONTAINING SENSITIVE UNCLASSIFIED AND CLASSIFIED INFORMATION

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

G. PUBLISHING UNCLASSIFIED PROCEEDINGS OF CONFERENCES AND WORKSHOPS

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

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

H. WRITING AND PUBLISHING UNCLASSIFIED BOOKS

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

I. DISTRIBUTION OF REPORTS TO CONTRACTORS

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

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

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

PART II

UNCLASSIFIED FORMAL CONTRACTOR REPORTS TO BE PRINTED BY NRC

A. DOCUMENTATION

1. Applicability

a. The requirements of this part apply to contractor and interagency agreement reports that are to be printed by NRC. Contractors may not print reports prepared for NRC except those DOE laboratories with JCP-authorized printing plants and then only those reports prepared for NRC's Office of Nuclear Regulatory Research.

b. With respect to sensitive unclassified and classified reports, the requirements set forth in Part V of this appendix shall be used in conjunction with NRC Appendix 2101.

c. The requirements of this part do not apply to consultants and contractors of the NRC boards, panels, and advisory committees which report directly to the Commission.

2. Front Cover and Title Page

a. Separate covers and title pages are required (see Exhibits 1 and 2 for contractor reports and Exhibits 3 and 4 for reports prepared under or pursuant to interagency agreements).*

b. The items shown in Exhibits 1 through 4 and discussed below shall appear on the title page and cover, as appropriate.**

(1) NRC Report Number

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

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

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

The NRC identification number will have the form:

NUREG/CR-XXXX or NUREG/CP-XXXX

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

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

(2) Title and Subtitle

(a) Use a brief title that indicates clearly the subject matter covered in the report.

(b) When a report is prepared in more than one volume, repeat the primary title on each volume.

(c) If appropriate, show the type of report (e.g., annual report, final report, thesis, etc.) and the period covered as part of the subtitle.

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

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

(4) Organization Identification

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

(5) Basis for Report Date(s)

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

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

3. Availability Information

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

4. Disclaimer

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

5. Previous Reports in Series

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

6. Abstract

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

7. References and Bibliographies

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

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

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

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

8. Bibliographic Data Sheet

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

B. PATENT AND SECURITY REVIEWS

1. Patent Review

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

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

2. Security Review

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

C. PROCEDURES FOR PRINTING AND DISTRIBUTING

1. Printing

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

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

2. Reprinting

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

3. Distribution of Reports

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

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

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

EXHIBIT 1

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

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

NUREG/CR-1676
NUSAC-566
Vol. 1

Title

Using Advanced Process Monitoring to Improve Material Control

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

Final Report
September 1979 - September 1980

Author(s)

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

Contractor

NUSAC Incorporated

NRC

Prepared for
U.S. Nuclear Regulatory Commission

Approved: August 29, 1984

EXHIBIT 2

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

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

NUREG CR 1076
NUSAC 656
Vol 1

Title

Using Advanced Process Monitoring to Improve Material Control

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

Final Report
September 1979 - September 1980

Report Dates and Basis

Manuscript Completed: September 1980
Date Published: September 1980

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

Prepared by:

Contractor Name and Address

NRC Sponsorship

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

NRC Contract No.

NRC FIN B0437

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

NRC Appendix 3909

EXHIBIT 3

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

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

NUREG/CR-1952
SAND81-0151

Title

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

Type of Report or Subtitle

Independent Verification Testing Program
Independent Verification Test-1

Author(s), Editor(s)

Prepared by L. L. Bonzon, W. H. Buckalew, F. V. Thome, J. A. Lewis, T. W. Gimple Sr., W. R. Rutherford, A. B. Bennett, NRC

Contractor

Sandia National Laboratories

Sponsorship

Prepared for
U.S. Nuclear Regulatory Commission

Approved: August 29, 1984

EXHIBIT 4

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

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

NUREG/CR-3862
SAND83-0151
R4

Title

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

Subtitle

Independent Verification Testing Program
Independent Verification Test 1

Report Dates

Author(s), Editor(s)

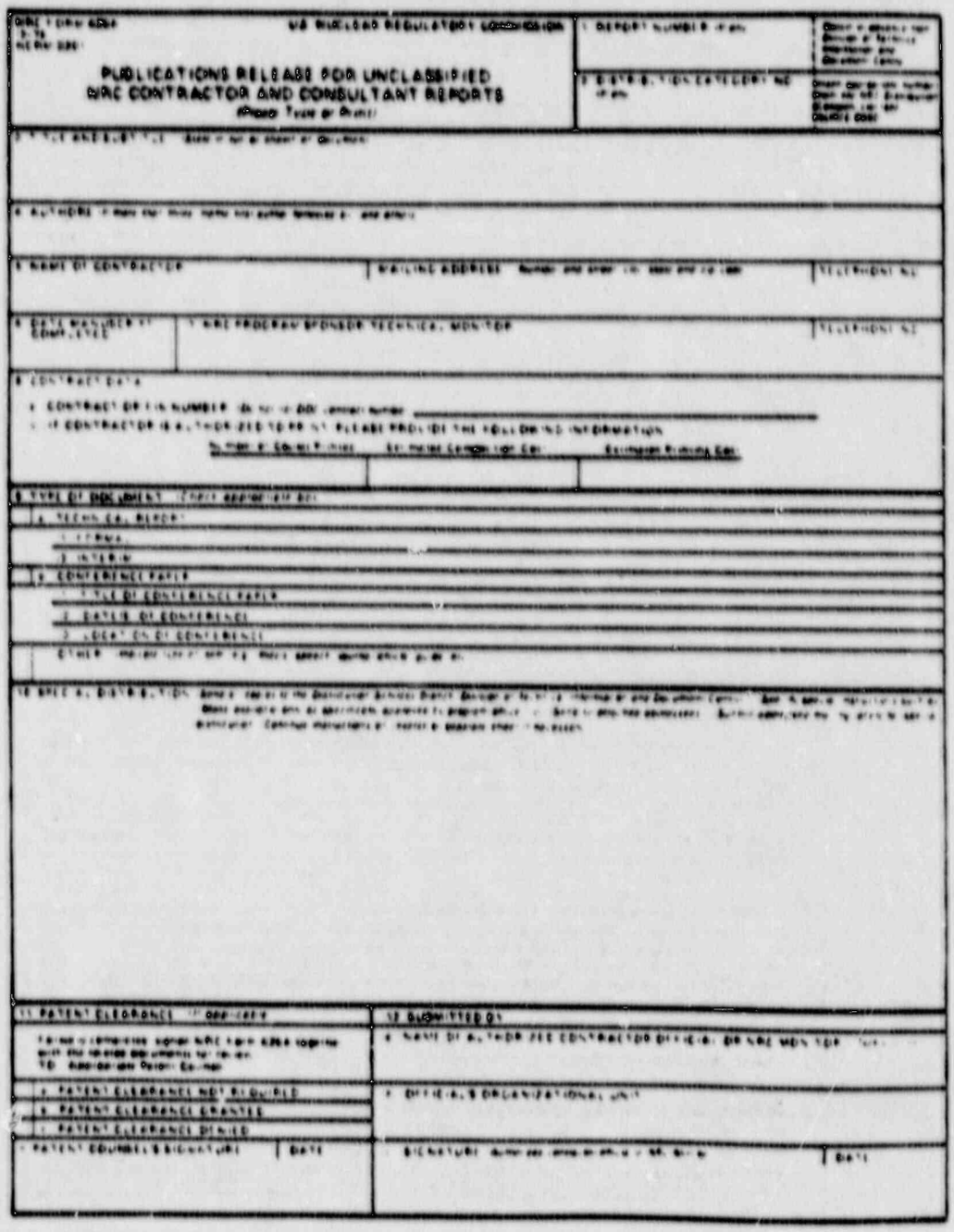
Contractor's Name and Address

NRC Sponsorship

Prepared for
Division of Resident and Regional Reactor Inspection
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
NRC FIN B3101

NRC FIN No.

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



PUBLICATIONS RELEASE FOR UNCLASSIFIED
NRC CONTRACTOR AND CONSULTANT REPORTS

EXHIBIT 8
DISCLAIMER AND AVAILABILITY STATEMENTS
(BACK OF COVER)

NOTICE

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, or any of their employees, makes any warranty, expressed or implied, or assumes any legal liability 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.

NOTICE

Availability of Reference Materials Cited in NRC Publications

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

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

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

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

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

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

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

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

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

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

GPO Printed copies price: _____

EXHIBIT 7
NRC FORM 335 - BIBLIOGRAPHIC DATA SHEET

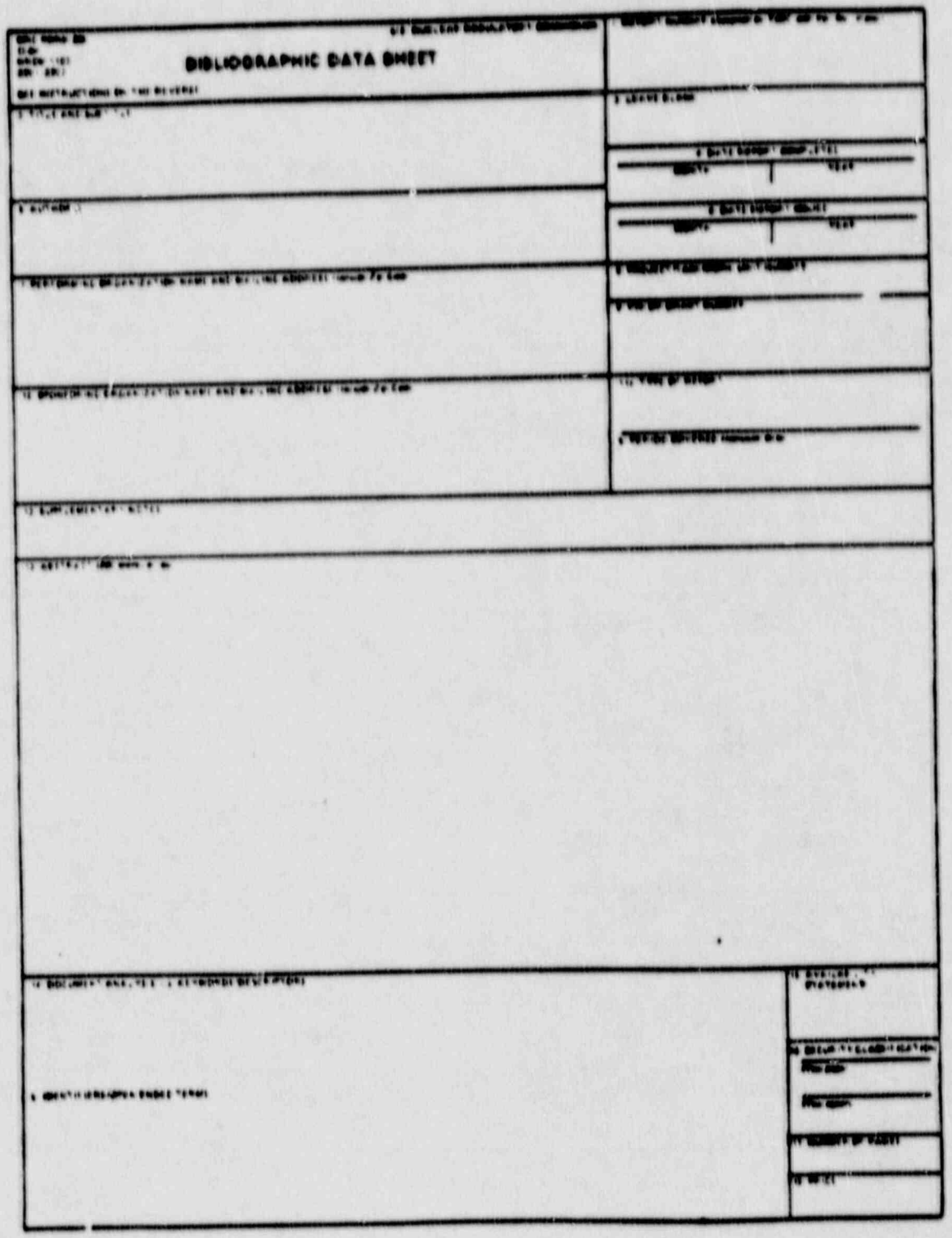


EXHIBIT 7 (Continued)
BACK OF NRC FORM 335

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

INSTRUCTIONS

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

1. **REPORT NUMBER.** Each individually bound report shall carry a unique alphanumeric designation (NUREG) assigned by the Division of Technical Information and Document Control. ADM in accordance with American National Standard ANSI Z39.23-1974 Technical Report Number (TRN). Use uppercase letters, Arabic numerals, slashes and hyphens only, as in the following examples: NUREG-0106, NUREG/CP-0010, NUREG/CR-0010, and NUREG/GR-0010. For reports in a series and Vol. Supp. Revision and Addendum, when necessary, add contractor cross-reference identification number (if any) after NUREG number, e.g. PNL-XXXX, SANDXX-XXXX, BATTXXXX.

2. **TITLE AND SUBTITLE.** Title should indicate clearly and briefly the subject coverage of the report, including any subtitle to the main title. When a report is prepared in more than one volume, repeat the primary title, add volume number and include subtitle for the specific volume. Use upper and lower case letters, but capitalize computer code names. Do not use acronyms and initialisms in titles; they may be added in parentheses.

3. **LEAVE BLANK.**

4. **DATE REPORT COMPLETED.** Each report shall carry a date indicating month and year project/task completed.

5. **AUTHOR(S).** Give names in conventional order (e.g. John B. Doe, J. Robert Doe). List author's affiliation if it is different from the performing organization.

6. **DATE REPORT ISSUED.** Each report shall carry a date indicating month and year published.

7. **PERFORMING ORGANIZATION NAME AND MAILING ADDRESS.** Give name, street, city, state, and ZIP code. List no more than two levels of an organizational hierarchy. Display the name of the organization's capacity or follow with Division, Office, Organization or Government agency, and address.

8. **PROJECT/TASK/WORK UNIT NUMBER.** Use the project, task and work unit numbers under which the report was prepared (if any).

9. **FIN OR GRANT NUMBER.** Insert the FIN or grant number under which report was prepared.

10. **SPONSORING ORGANIZATION.** List NRC Division, Office or U.S. Nuclear Regulatory Commission, Washington, DC 20555.

11. a. **TYPE OF REPORT.** State draft, final, preliminary, topical, technical, regulatory, customer, etc., and if applicable, inclusive dates.

    b. **PERIOD COVERED.**

12. **SUPPLEMENTARY NOTES.** Enter information not included elsewhere but useful, such as: Prepared in cooperation with... Presented at conference of... To be published in... Supersedes... Supplements... Enter a report is revised, indicate whether the new report supersedes or supplements the older report.

13. **ABSTRACT.** Include a brief (200 words or less) factual summary of the most significant information contained in the report. If the report contains a significant bibliography or literature survey, or multiple volumes, mention it here. Abstract is to be prepared by author or project manager.

14. **DOCUMENT ANALYSIS.**

    a. **KEY WORDS/DESCRIPTORS.** Select from the Energy Data Base Subject Thesaurus, DOE/TIC 9200 (R.), the precise authorized terms that identify the major concept of the research and are sufficiently specific and precise to be used as index entries for cataloging.

    b. **IDENTIFIERS AND OPEN-ENDED TERMS.** Use identifiers for project names, code names, equipment designations, etc. Use descriptors (controlled terms) from the Energy Data Base Subject Thesaurus, DOE/TIC 9200 (R.), for those subjects for which no descriptor exists in the Thesaurus.

15. **AVAILABILITY STATEMENT.** Denote public accessibility, for example "unlimited", or limitation for reasons other than security.

16. **SECURITY CLASSIFICATION.** Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., unclassified).

17. **NUMBER OF PAGES.** Leave blank. (Added by NTIS)

18. **PRICE.** Leave blank. (Added by NTIS)

PART III

UNCLASSIFIED TECHNICAL LETTER REPORTS

A. FORMAT

1. Applicability

a. The requirements of this part apply to unclassified contractor technical letter reports. (See Part I.A for definition.)

b. The requirements of this part do not apply to consultants and contractors to the NRC boards, panels, and advisory committees which report directly to the Commission.

2. Requirements

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

B. PATENT AND SECURITY REVIEWS

1. Patent Review

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

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

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

2. Security Review

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

PART IV

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

A. DOCUMENTATION

1. Applicability

a. The requirements of this part apply to NRC staff who are responsible for agreements with DOE Laboratories and their contractors who print regulatory and technical reports required by NRC. (See also Chapter NRC-1102).

b. With respect to sensitive unclassified and classified reports the requirements set forth in Part V of this appendix shall be used in conjunction with NRC Appendix 2101.

c. The requirements of this part do not apply to consultants and contractors to the NRC boards, panels and advisory committees which report directly to the Commission.

2. Front Cover and Title Page

a. Separate covers (of different paper than that of the text) and title page are required.*

b. Items such as those shown in Exhibits 3 and 4 and discussed below shall appear on the front cover and title page, as appropriate.** While layouts and typefaces need not be exactly the same as in Exhibits 3 and 4, the items shall appear in approximately the locations indicated and with the same relative prominence.

(1) NRC Report Number

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

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

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

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

The NRC identification number will have the form:

NUREG/CR-XXXX or NUREG/CP-XXXX

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

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

(2) Title and Subtitle

(a) Use a brief title, which indicates clearly the subject matter covered in the report.

(b) When a report is prepared in more than one volume, repeat the primary title on each volume.

(c) If appropriate, show the type of report (e.g., annual report, final report, etc.) and the period covered as part of the subtitle.

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

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

(b) Authors may be identified on backstrips (spines) of bound volumes.

(4) Organization Identification

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

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

(5) Basis for Report Dates(s)

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

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

3. Availability and Price Information

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

4. Disclaimer

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

5. Previous Reports in Series

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

6. Abstract

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

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

7 References and Bibliographies

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

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

8 Bibliograpic Data Sheet

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

B PATENT AND SECURITY REVIEWS

1. Patent Review

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

2. Security Review

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

C. PROCEDURES FOR PRINTING AND DISTRIBUTING

1. Printing

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

2. Reprinting

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

3. Distribution of Reports

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

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

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

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

PART V

REPORTS CONTAINING SENSITIVE UNCLASSIFIED AND CLASSIFIED INFORMATION

A. APPLICABILITY

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

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

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

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

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

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

B. OFFICIAL USE ONLY AND LIMITED OFFICIAL USE INFORMATION.

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

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

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

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

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

C. PROPRIETARY INFORMATION

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

1. trade secrets.

2. privileged or confidential research, development, commercial or financial information exempt from mandatory disclosure under 10 CFR Part 2, "Rules of Practice for Domestic Licensing Proceedings," Sections 2.740 and 2.790 and under 10 CFR Part 9, "Public Records," Section 9.5, "Exemptions."

3. information submitted in confidence to NRC by a foreign source, which has been determined by NRC to be unclassified.

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

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

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

D. SAFEGUARDS INFORMATION

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

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

1. security measures for the physical protection of special nuclear material

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

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

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

E. CLASSIFIED INFORMATION

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

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

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

EXHIBIT 8
SAMPLE COVER FOR A CONTRACTOR REPORT CONTAINING OFFICIAL USE ONLY INFORMATION

OFFICIAL USE ONLY

NUREG/CR-XXXX (S)

Title

Subtitle and Type of Report

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

WITHHELD FROM PUBLIC DISCLOSURE

OFFICIAL USE ONLY

EXHIBIT 8
SAMPLE TITLE PAGE FOR A CONTRACTOR REPORT CONTAINING OFFICIAL USE ONLY INFORMATION

OFFICIAL USE ONLY

NUREG/CR-XXXX (S)

Title

Subtitle and Type of Report

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

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

OFFICIAL USE ONLY

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

OFFICIAL USE ONLY

OFFICIAL USE ONLY

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

LIMITED OFFICIAL USE

NUREG/CR-XXXX (S)

Title
Subtitle and Type of Report

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

WITHHELD FROM PUBLIC DISCLOSURE

LIMITED OFFICIAL USE

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

LIMITED OFFICIAL USE

NUREG CR XXXX (S)

Title
Subtitle and Type of Report

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

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

LIMITED OFFICIAL USE

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

LIMITED OFFICIAL USE

LIMITED OFFICIAL USE

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

PROPRIETARY INFORMATION

NUREG/CR-XXXX (P)

Title
Subtitle and Type of Report

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

TRADE SECRET OR PRIVILEGED OR CONFIDENTIAL COMMERCIAL OR FINANCIAL INFORMATION

This document contains information submitted to NRC by

_____

(Name of Company and Name of Submitter)

which has been determined (which is claimed) to be proprietary in accordance with (10CFR § 2.790 or 10CFR § 9.17(a) 10CFR Part 21) and is exempt from mandatory public disclosure (or subject to 10CFR Part 9

WITHHOLD FROM PUBLIC DISCLOSURE

_____

(Specific Time or Other Date)

PROPRIETARY INFORMATION

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

PROPRIETARY INFORMATION

NUREG/CR XXXX (P)

Title
Subtitle and Type of Report

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

FOREIGN INFORMATION

This document contains information submitted to NRC by:

_____
(Name of Company and Name of Submitter)

which is described in 10CFR 2.790(a)(4) and is exempt from mandatory public disclosure pursuant to 10CFR Part 9.

WITHHOLD FROM PUBLIC DISCLOSURE

_____
(Signature, Title and Office of Submitter)

PROPRIETARY INFORMATION

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

PROPRIETARY INFORMATION

NUREG/CR-XXXX (P)

Title

Subtitle and Type of Report

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

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

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

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

This document contains information submitted to NRC by:

(Name of Company and Name of Submitter)

which has been determined (which is claimed) to be proprietary in accordance with 10CFR 2.790 (c) (10CFR 9.5 (10CFR Part 2) (or is exempt from mandatory public disclosure pursuant to 10CFR Part 9

WITHHOLD FROM PUBLIC DISCLOSURE

(Signature, Title and Office) (Date)

PROPRIETARY INFORMATION

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

PROPRIETARY INFORMATION

NUREG/CR XXXX (P)

Title
Subtitle and Type of Report

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

Author(s): Editor(s)

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

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

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

FOREIGN INFORMATION

This document contains information submitted to NRC by:

(Name of Company and Name of Submitter)

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

WITHHOLD FROM PUBLIC DISCLOSURE

(Signature, Title and Office) (Date)

PROPRIETARY INFORMATION

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

PROPRIETARY INFORMATION

PROPRIETARY INFORMATION

EXHIBIT 19
COVER SHEET FOR REPORT CONTAINING PROPRIETARY INFORMATION

PROPRIETARY INFORMATION

NOTICE

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

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

PROPRIETARY INFORMATION

Approved Despite 10 [illegible]

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

SAFEGUARDS INFORMATION

NUREG/CR-XXXX (SG)

Title
Subtitle and Type of Report

Author(s): Editor(s)
Contractor

Prepared for
U.S. Nuclear Regulatory Commission

The determination that this document contains safeguards information was made by:

(Name, Title, Organization) Date

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

SAFEGUARDS INFORMATION

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

SAFEGUARDS INFORMATION

NUREG/CR-XXXX (SG)

Title

Subtitle and Type of Report

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

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

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

SAFEGUARDS INFORMATION

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

SAFEGUARDS INFORMATION

SAFEGUARDS INFORMATION

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

SAFEGUARDS INFORMATION

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

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

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

SAFEGUARDS INFORMATION

PART VI

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

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

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

A. PREPARATION OF DRAFT PRELIMINARY REPORTS FOR COMMENT

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

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

NOTICE

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

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

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

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

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

B. DISTRIBUTION BY NRC PROJECT MANAGERS

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

1. Express Mail, Priority Mail (First Class weighing more than 12 ounces)

2. International Express Mail (Air Mail weighing more than 10 ounces)

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

C. COMMENT PERIOD AND ISSUANCE OF NUREG/CR REPORT

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

D. REPORT IDENTIFIERS

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

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

E. MAILING TO PROGRAM PARTICIPANTS

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

F. SECURITY

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

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

DRAFT PRELIMINARY REPORT (CODE) FOR COMMENT

FIN NO. _____

Title of Program

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

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

for

U.S. Nuclear Regulatory Commission

NOTICE

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

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

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

TO: NRC Project Manager

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

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

DOE Facility or Contractor Representative

EXHIBIT 26

TRANSMITTAL SHEET FOR REQUESTING MAILING TO COOPERATIVE PROGRAM PARTICIPANTS

Recipients: Addresses on attached labels

Method of Mailing:

_____ First Class Postal Service to U. S. addresses

_____ Express mail to U. S. addresses*

_____ Air mail to foreign addresses*

_____ Surface mail to foreign addresses (may require up to three (3) months)

THIS MAILING CONTAINS NO PROPRIETARY INFORMATION OR OTHER SENSITIVE UNCLASSIFIED INFORMATION

Special Instructions

Individual Requesting Mailing: _____
Project Manager or High Authority

Enclosures:

1. Address labels
2. Documents to be mailed

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

1. Express Mail, Priority Mail (First Class weighing more than 12 ounces)

2. International Express Mail (Air Mail weighing more than 10 ounces)

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

Battelle
Putting Technology To Work
505 King Avenue
Columbus, Ohio 43201-2693
Telephone (614) 424-6424
Facsimile (614) 424-5263

Revised
Small Business and Small Disadvantaged Business Subcontracting Plan
(Submitted In Accordance with P.L. 95-507)

Contractor Name: Battelle-Columbus Division (BCD)
Address: 505 King Avenue, Columbus, Ohio 43201-2693
Type of Organization: Non-Profit Research and Development
Solicitation or Contract No.: RS-RES-89-046
Proposal Number/Title: 723-U-3547RX/SHORT CRACKS IN PIPING AND PIPING WELDS RESEARCH PROGRAM
BCD Contract No.: ----------
Client/Government Contracting Officer: NRC/MS. PATRICIA A. SMITH
Name of Individual Who Prepared This Plan: MARILYN HENSLEY
Telephone No.: 614-424-7094
Proposed Contract Performance Period: 48 MONTHS
Proposed Contract Amount: $4,191,786

Plan Elements

A. Objective

It is our intent to assist small business concerns and small disadvantaged business concerns to the maximum extent practicable consistent with sound business practices and with the efficient performance of our contract requirements. We intend to give such business concerns a fair and equitable opportunity to compete for business when consistent with our contractual obligations. We pledge to make a concerted effort to locate such concerns to insure an equitable opportunity in competing for subcontracts which are contemplated in the performance of this contract.

B. (a) Percentage Goals

The percentage goals expressed in terms of percentage of total planned subcontract dollars are to:

(i) Obligate 37.8 % to Small Business (SB) Concerns.
(ii) Obligate 1.3 % to Small Disadvantaged (SDB) Concerns.

(b) The following dollar values correspond to the percentage goals shown in (a) above.

(i) Total dollars planned to be subcontracted to SB: $ 566,260*.
(ii) Total dollars planned to be subcontracted to SDB: $ 18,400*.

*Includes anticipated indirect material expenditures.

(c) The total estimated dollar value of all planned subcontracting (to all types of businesses) under this contract is $ 1,496,444 .

(d) Table A is a description of how BCD plans to allocate designated subcontract dollars to accomplish the goals set forth in this subcontracting plan. The names of organizations contained are provided for information purposes. BCD retains the right to change any or all of these planned subcontractors without prior notification to the contracting officer, understanding that some of the resulting subcontracts may require prior approval. This statement does not mean that the above percentage goals will decrease as a result of change of subcontractors.

(e) To establish the goals for SB/SDB/WOB* concerns under this project, Battelle utilized a calculation of anticipated direct-purchased items in conjunction with an allocation of necessary indirect purchases. The indirect purchases are based upon the unburdened direct labor dollars associated with the subject proposal.

---

* Women-Owned Business

TABLE A
DIRECT PURCHASES AND SUBCONTRACTING

	LARGE BUSINESS	SMALL BUSINESS	SMALL DISADVANTAGED BUSINESS
DIRECT MATERIAL PURCHASES			
Grinding/Wire Wheels		$ 1,966	
Carbon Steel Pipe/Rod		19,372	
Computer Discs		152	
Conax Fittings		2,911	
Cut Off Wheels		456	
End Caps		1,220	
Heater Tapes		22,026	
HRSP		8,088	
Hydraulic Ram	$ 75,938		
Instrumentation Wire	3,004		
Insulation		5,118	
Lab Supplies	20,743		
Outer Sheild Weld Wire		604	
Roller Bearings		1,368	
Strain Gages		323	
String Potentometers		4,626	
Structural Steel		4,096	
Wall End Caps		1,547	
Weldable Strain Gages	24,228		
Wire Wheel Brush		600	
Film & Processing		948	
Subcontractors:			
Worthington Steel	75		
United McGill	86,940		
Consultant:			
JWO PAN			$10,000
SUB TOTAL	**$210,928**	**$ 75,421**	**$10,000**
INDIRECT MATERIAL PURCHASES	**$700,856**	**$490,839**	**$ 8,400**
TOTAL MATERIAL PURCHASES ($1,496,444)	**$911,784**	**$566,260**	**$18,400**
100%	**60.9%**	**37.8%**	**1.3%**

C. The following individual will administer the subcontracting program:

Name: Mr. Gail Engel
Telephone No.: (614) 424-7091
Title: Manager, Subcontracts

This individual's specific duties, as they relate to BCD's program are as follows:

General overall responsibility for review, monitoring and execution of the plan including but not limited to:

- Obtaining SB/SDB/WOB sources from all applicable government agencies such as SBA.
- Assuring inclusion of SB/SDB firms in all solicitations where appropriate.
- Attending or arranging for attendance at Business Opportunity Workshops, Minority Business Enterprise Seminars, Trade Fairs, etc.
- Conducting or arranging for conduct of motivational training for purchasing personnel pursuant to the intent of P.L. 95-507.
- Monitoring attainment of proposed goals.
- Reviewing solicitations to remove statements, clauses, etc., which may tend to prohibit SB and SDB participation.

D. Description of Efforts

- To assure that SB/SDB concerns will have an equitable opportunity to compete for subcontracts, BCD has issued a company-wide policy statement (see Attachment 1).
- The top management of BCD is involved in the implementation of Public Law 95-507 through their policy statements and their direction and leadership at company-wide meetings.
- BCD has direct access to the Procurement Automated Source Selection (PASS) system.
- BCD has requested SB/SDB and WOB directories from over 200 organizations in the United States, including the 47 regional offices of the National Minority Purchasing Council (NMPC). As a result, BCD now has over 40 SB/SDB/WOB directories available to its technical and management personnel.
- As an aid in preparing future proposals, BCD has requested brochures from hundreds of SB/SDB/WOB concerns whose qualifications appear to be appropriate for BCD's programs. When BCD receives these brochures they are sent to the suitable departments where they are carefully reviewed and considered as potential subcontractors and vendors for BCD's projects.

- BCD has attended and will continue to participate in various trade fairs, meetings and conventions that deal with Public Law 95-507. BCD will interview and visit, if appropriate, newly located SB/SDB/WOB concerns requesting to do business with BCD.

- Mr. Gail Engel and his assistant, Marilyn Hensley, are assisting BCD in guiding and training its personnel involved in the acquisition process.

- Mr. Gail Engel and Marilyn Hensley are arranging for BCD's RFPs and solicitations, the time for bid preparation quantities, specifications, and delivery schedules, to facilitate participation by SB/SDB/WOB concerns.

- BCD does not manufacture goods or products, therefore, we do not have a formal Make-or-Buy Program. However, developmental items are sometimes made on a one-time basis and consideration is given SB/SDB/WOB in decisions concerning the purchase of component parts.

- BCD will monitor and evaluate progress on a continuing basis to assure that BCD is in compliance with its stated goals. BCD will also monitor and evaluate those plans written by BCD's subcontractors.

- BCD will maintain records of performance for audit purposes and keep the BCD staff informed on changes in Government programs and BCD's performance toward meeting goals.

E. Clause Flowdown

BCD agrees that FAR 52.219-8 "Utilization of Small Business Concerns and Small Disadvantaged Business Concerns" will be included in all subcontracts which offer further subcontracting opportunities, and BCD does ensure that all subcontractors (except Small Business) who receive subcontracts in excess of $1,000,000 in the case of a contract for the construction of any public facility, or in excess of $500,000 in the case of all other contracts, will be required to adopt a subcontracting plan similar to this one.

F. Periodic Reports

BCD will submit the SF 295 and SF 294 reports as required by contract and as prescribed by the Contracting Officer and does ensure offeror that the subcontractors required to submit subcontracting plans to BCD must also agree to submit SF 294 and SF 295 reports to BCD. BCD will cooperate in any studies or surveys and submit periodic reports as may be required by the contracting agency or the Small Business Administration in order to determine the extent of compliance by the contractor with the Subcontracting Plan during the life of the contract.

C. Records

BCD will establish and maintain the following types of records:

(1) SB/SDB concerns source lists, guides and other data identifying such vendors.

(2) Organizations contacted for SB/SDB concerns sources.

(3) All subcontract solicitations over $100,000, indicating on each solicitation:

- whether SB was solicited, and if not, why not
- whether SDB was solicited, and if not, why not, and
- reasons for the failure of solicited SB or SDB to receive the subcontractor award.

(4) Other outreach efforts are:

- Contacts with minority and small business trade associations
- Contacts with business development organizations
- Attendance at small and minority business procurement conferences and trade fairs.

(5) Internal activities to guide and encourage buyers are:

- Workshops, seminars, training programs, etc.,
- Monitoring activities to evaluate compliance.

(6) Award data submitted to the Government to include name and address of subcontractor, on a contract-by-contract basis.

Signed: Marilyn Hensley

Typed Name/Title: Marilyn Hensley, Small/Small Disadvantaged Business Administrator

Date: February 21, 1990

Plan Accepted by: _____
(Government Contracting Officer)

Date: _____

Attachment

SUBJECT
Procurement
TAB SECTION
Finance/General
DESIGNATED CONTACT(S)
Corporate Director, Finance; General Counsel

POLICY STATEMENT

All procurement activities by Battelle and BDC are conducted according to high standards of business ethics in order to build good Sponsor, community, and business relations, while accomplishing Battelle objectives. The following principles apply to all procurement actions:

1. Procurement decisions are based on fairness of price as well as on specific needs, quality, quantity, delivery, service, and requirements of the applicable Sponsor agreement.
2. Agreement terms and conditions must be fair and equitable to both seller and buyer, provide protection for Battelle and the Sponsor, and comply with Battelle's contractual obligations.
3. Staff members engaged in a procurement activity have the responsibility to secure the timely professional advice of others (such as financial and legal counsel).
4. Staff members must deal impartially on all procurement actions and avoid situations where conflicts of interest exist.
5. The Battelle U.S. entities support the objectives of the U.S. Government in its policy to place a fair portion of its total purchases with qualified small-business concerns, small disadvantaged business concerns, woman-owned business concerns, and concerns located in designated labor surplus areas who are competitive and who have demonstrated other necessary qualifications.
6. Procurement or commitment for procurement may be made only by those persons specifically delegated in writing by the head of the Component or BDC.
7. When goods or services are available within the Battelle Organizations, complete consideration should first be given to the Battelle source.

SUPPLEMENTARY CONDITIONS

The following supplementary conditions relate to the correspondingly numbered items in the preceding Policy Statement of this Section.

Re 1. Procurement activities should provide reasonable competition among responsible suppliers, compatible with the needs, quality, quantity, delivery, services required, and applicable laws or regulations. Examples of situations where it is not practical to make the procurement on a competitive basis are:

a. The procurement involves a proprietary or brand item completely controlled by a vendor and only that item will suffice.
b. A true emergency exists and the procurement cannot be delayed to allow competitive activities.
c. The Sponsor has designated a specific vendor, item, or service for the project.
d. The project dictates use of a particular item, vendor, or service.
e. The item being procured is a matching part of assembly and must be purchased from the original producer of the equipment.

All procurements on Battelle-funded transactions in excess of $10,000 not on a competitive basis are to be documented to show the reasonableness of this action, unless otherwise required by Sponsors.

Contracts for the purchase of building or facility construction services in excess of $100,000 must be on a competitive basis unless an exception is approved by the Corporate Director, Finance. Competition may be used for lesser amounts where this improves procurement.

Form NRC-23
(1-79)

Published in advance of incorporation in
NRC Manual Chapter 0904
File and retain in Manual until superseded.

UNITED STATES NUCLEAR REGULATORY COMMISSION
NRC MANUAL

BULLETIN

NO. 0904-4 **DATE:** April 28, 1989

SUBJECT: NRC COMPUTER SOFTWARE POLICY

This Bulletin sets forth NRC policy on the development, modification, copying and distribution, documentation, use, and disposal of NRC computer software, particularly microcomputer software. A major goal of the policy is to encourage innovative use of software while at the same time assuring compatibility among agency software products, consistency with the NRC's long range ADP plans, and compliance with copyright laws, license agreements, and other regulations. Bulletin 0904-4 supersedes Bulletin 0904-3, previously issued on January 21, 1987.

The Office of Information Resources Management is in the process of revising the entire Manual Chapter, including the section dealing with policy and procedures for acquiring microcomputer equipment, software, and support services; and the section dealing with ADP responsibilities for planning, management, and delivery of system software services. Comments will be solicited from Office/Regions on the revision to Chapter 0904.

Joyce A. Amenta, Director
Office of Information Resources Management

I. Purpose

The purpose of this Bulletin is to set forth NRC policy on the development, modification, copying and distribution, documentation, use, and disposal of NRC computer software, particularly microcomputer software. A major goal of the policy is to encourage innovative use of software while at the same time assuring compatibility among agency software products, consistency with the NRC's long range ADP plans, and compliance with copyright laws, license agreements, and other regulations.

II. Definitions

Computer Application: (1) The use of computer technology that involves the creation, modification, or communication of agency data; or (2) a computer program that performs this function.

Data: Information to which electronic access is required in the conduct of agency business.

Software: Computer programs, procedures, and associated data that adapt a computer to a particular task or operation.

Commercial Software: Software that is purchased, leased, or subject to copyright laws, license conditions, or other restrictions. Shareware, which is copyrighted software available to the general public with minimal implied cost after trial use, is considered commercial software.

Customized Software: Software that is developed or modified to meet the specific needs of an NRC organizational unit or staff member. Customized software may result from the application of commercial software (FORTRAN, BASIC, or COBOL programs), may be developed for use with commercial software (dBASE applications, LOTUS spreadsheets, DISPLAYWRITE documents), or may be generated independently of any commercial software.

NRC Supported Software: Commercial or customized software for which maintenance and updates, technical assistance and training for end users, and other support services are provided by the Director, Office of Information Resources Management (IRM). NRC supported software is available upon request with the approval of the Office/Region ADP contact. A list of supported software is available from the Information Technology Services (ITS) Support Center.

Public Domain Software: Software that is available to the general public without cost, copyright or other restriction. Public domain software and shareware are available from Federal Government sources, computer user groups, electronic bulletin boards, and certain periodicals.

III. Software Acquisition/Development

There are two major types of software that are used on NRC computers: (1) commercial software and (2) customized software (see Section II for definitions). When a requirement has been identified for the acquisition or development of software, IRM will, in coordination with the end user, first determine if NRC supported software or existing customized software can be used. If neither supported software nor existing customized software is appropriate, the use of other commercial software should be considered. Only in the event that no appropriate commercial or existing customized software is available should customized software development be considered. It is generally more cost- effective to use commercial software than to custom build an application.

Commercial Software:

- IRM acquires all commercial software for NRC use except where authority has been delegated by IRM. Delegation is considered on a case-by-case basis.

- NRC Bulletin 0904-1, "Policy and Procedures for Acquiring Microcomputer Equipment, Software, and Support Services," contains procedures for requesting software. IRM will give priority consideration to the acquisition of commercial software for specific applications, if no supported software or existing customized software will meet the user's requirement or if the acquisition of commercial software would eliminate or substantially reduce the need for customized application development.

- IRM coordination and approval is required for purchase or lease of commercial software by contractors or DOE laboratories for specific use in the development of machine-readable contract deliverables. This approval is not required for NRC supported software.

- Copies of commercial software are acquired for each computer on which the software will be used. Compliance with software license agreements in networked applications will be determined by IRM in cooperation with the Office of the General Counsel. For site-licensed software, IRM will supply copies in conformance with the license conditions.

- Public domain microcomputer software, such as utilities, may be acquired for use on NRC equipment.

- Shareware or other software subject to copyright laws or other restriction can be used only with the approval of IRM.

- Computer users should be aware that there have been numerous reports of purposely destructive public domain software which could seriously damage NRC microcomputer or mainframe systems and data. Since individuals could be held personally responsible for such damage (See NRC Appendix 5201, Part 1, Paragraphs H and J), users should limit their use of public domain software to those programs which have been approved by IRM.

Customized Software:

- IRM review and approval is required for the development of any customized software application which is anticipated to impact agency resources beyond the organizational unit considering the development. Agency resources include lease or purchase of hardware or commercial software, timesharing services, training, maintenance, or technical support provided by IRM.

- NRC Bulletin 0904-2, "ADP Responsibilities, Planning, Management, and Delivery of System Software Services," contains procedures for requesting IRM development of customized software. In general, customized software will be developed only when no commercial software or existing customized software is available to meet the need. IRM will first consider modification of existing applications where possible.

- Office/Region management is responsible for monitoring their staff and program support funding resources used in software and data development, and to assure compliance with NRC computer-related policy.

- End users creating customized software applications should first consider obtaining necessary data from existing IRM-maintained systems, thus avoiding the need to maintain duplicate data.

- Where possible, it is usually more cost-effective overall for end users to develop an application using a general purpose software package such as dBase III or LOTUS 1-2-3 than to use a programming language such as FORTRAN or BASIC.

- In general, the development of customized software applications by NRC contractors does not require the review and approval of IRM provided that the development does not impact other agency resources. Such resources include lease or purchase of hardware or commercial software for NRC staff, timesharing services on NRC computer systems, or the training and technical support of NRC staff.

- Contracts and DOE Laboratory agreements which involve the development of customized software must include Attachment 1, "Development, Submittal, Distribution and Documentation Requirements for Machine-Readable Contract Deliverables," but require IRM approval only when:

  - the contract or DOE laboratory agreement involves the purchase or lease of software or ADP equipment (including, but not limited to, microcomputer, microcomputer boards, terminals or peripherals) specifically for use in satisfying a requirement of the contract or DOE Laboratory Agreement. Such equipment would normally be returned to the NRC at the completion of the contract per Manual Chapter 1102 and 5101.

  - use by the NRC of deliverables (e.g., software or data) developed under the contract or DOE Laboratory Agreement will necessitate the purchase or lease of ADP equipment, software, or ADP services not already available to the NRC staff, including, but not limited to, timesharing services, microcomputers, terminals, microcomputer boards, peripherals, network and communications equipment, or vendor software.

- the contract or DOE Laboratory Agreement specifies that the NRC will provide timesharing services, or that the contract will acquire timesharing services which could be more cost-effectively furnished by the NRC under its own timesharing agreements.

- any of the requirements in Attachment 1 are to be waived or modified.

° To assure that contract deliverables are portable and are compatible with NRC ADP equipment and software, it is the responsibility of contract monitors to include Attachment 1, "Development, Submittal, Distribution and Documentation Requirements for Machine-Readable Contract Deliverables" in the statement of work for all contracts or DOE laboratory agreements which could involve the development of customized software applications or other machine-readable contract deliverables. Contract monitors shall assure that contractors and DOE Laboratories comply with the requirements in Attachment 1 and shall specify any additional constraints such as memory size and specific software version and equipment configuration of the NRC machine(s) on which the applications will eventually run.

° It is the responsibility of Offices/Regions to obtain IRM coordination and approval when required by this Bulletin. It is the responsibility of the Division of Contracts and Property Management, ADM, to ensure that the necessary coordination and approval is obtained before a commercial contract is initiated.

IV. Software Modification

Commercial Software

° NRC supported software is provided and installed by IRM or designated Office and Region ADP contacts.

° Installation procedures and guidelines for the installation of supported software are documented and supplied by IRM. Users are discouraged from modifying software installation procedures for several reasons:

- The use of all NRC supported microcomputer software, if installed according to standard procedures and guidelines provided by IRM, is consistent between one machine and the next. Modification may confuse other staff members who expect to find the standard installation on the modified machine. Use may become limited to the individual performing the modification.

- IRM installation guidelines provide for easy interaction with peripheral devices (displays, printers, modems) and other agency resources (the NRC word processing system).

- IRM installation guidelines are used in the ITS Training Laboratory. Students expect computers used in the training program to be consistent with computers found at their normal duty station.

- IRM installation guidelines allow for ease of trouble shooting by the ITS Support Center, should the need arise.

- Modification to the software installation on machines with a fixed disk may make subsequent software installation or upgrades more difficult.

° For these reasons, users contemplating modifications should consult the Information Technology Services Support Center to discuss possible implications. Suggestions for changing the installation guidelines are welcomed.

Customized Software

° All software created by end users may be modified as desired. It is the responsibility of NRC Office/Region management to assure that modifications made by end users to such applications are incorporated into the software documentation as appropriate. Documentation and software should be provided to IRM and other users so that application in other parts of the agency is possible.

° All software maintained by IRM will be modified by IRM in accordance with the procedures in NRC Bulletin 0904-2.

V. Software Copying and Distribution

Commercial Software

° IRM distributes all commercial software used by the NRC.

° Copying commercial software for other than authorized backup purposes, or using a software package on a machine for which it has not been authorized may be a violation of the software license. NRC employees who violate licensing agreements by making or using unauthorized copies of NRC software or any other commercial software, risk disciplinary action and civil suit.

° Backup copies of commercial software are provided by IRM where appropriate. Additional copies of commercial software are rarely needed, particularly for fixed disk applications.

° It is NRC policy that individually-licenced software be used only on the machine for which it was purchased and to which it was assigned by IRM. If software must be moved from one machine to another, users should notify IRM's Small Systems Branch (Headquarters) or the appropriate Regional program support staff so that software inventory records can be updated.

Customized Software

° Customized software created by end users may be copied as required.

° If possible, users should avoid storing commercial and customized software on the same diskettes to avoid any violation of copyright restrictions or license conditions.

- In cases where internal or public distribution of customized applications software (including scientific applications software developed by NRC staff or contractors either for mainframes and microcomputers) is appropriate, such distributions are performed by, or under the guidance of, IRM to assure that applications receive at least minimal review for compliance with documentation and copyright standards before release. IRM will assure that programmatic distribution requirements are met for public and non-public software. NRC staff should not distribute any software for either microcomputers or mainframes on an ad hoc basis. NRC Contractors or DOE laboratories should not distribute any NRC software for either microcomputers or mainframes without formal approvals as described in Attachment 1, Section 3.

VI. Documentation

Commercial Software

- One copy of software documentation is provided by the vendor for each vendor software package acquired by the NRC. This documentation is normally provided to the user with the software.

Customized Software

- Creation of written documentation is an important part of the development and maintenance process for all customized applications. There are usually two types of documentation associated with each application: (1) user documentation, and (2) technical or programmer documentation. The first type of documentation is needed so that staff other than the developer can effectively use the system. The second type of documentation is needed in order to effectively maintain and/or change the system. It is good practice for users to document all applications that they develop, even those limited to individual use. It is mandatory that documentation be developed for all IRM approved applications so that staff other than the developer can use the software and so that the software value is not lost if the developer moves to another assignment or separates from the agency. Microcomputer Application Documentation Standards, prepared by IRM, are available from the ITS Support Center.

- It is the responsibility of Office/Region management to assure that appropriate documentation is developed and maintained within that organization by end users. Documentation should be provided to IRM and other users so that application in other parts of the agency is possible.

- Documentation requirements for contractor-developed software are covered in Attachment 1, Section 4.

VII. Software Use

Unofficial Use of NRC Software and Hardware

- NRC-accessible mainframes, NRC minicomputers, and NRC microcomputers, NRC office automation equipment, and associated software may be used only for official business per NRC Appendix 2301, Parts I and II. No unofficial use can or will be authorized. Employees who misuse NRC property or incur unauthorized timesharing costs may be subject to disciplinary action.

Use of Personally-Owned Hardware and Software for NRC Work

- Personally-owned hardware and software may be used at home for NRC work provided that (1) no NRC owned hardware or commercial software is used on personally-owned equipment without written authorization by the Director, Office of Information Resources Management, (2) no sensitive unclassified or classified information is accessed, processed, stored, or telecommunicated, (3) work products are usable at the office, (4) any use of personally-owned hardware and software for purposes of telecommunication with NRC-accessible timesharing facilities or electronic bulletin boards shall be in strict accordance with the security regulations of such facilities and with NRC security regulations associated with computer access as specified in NRC Appendix 2301, Part II.

- Personally-owned hardware and software may not be used in conjunction with NRC hardware and software. Personally-owned hardware and software may be used independently for official NRC business in an NRC workplace with written authorization by the Director, Office of Information Resources Management.

- The NRC will supply hardware and software needed for NRC work. A limited number of portable computers and software are available from the IRM Small Systems Branch and Program Offices for loan when necessary.

Backups of Data and Programs

- IRM or a designated Office/Region contact will provide necessary backup copies of NRC supported software. A backup copy will be provided when (1) the required backup is not provided by the software vendor, (2) a backup copy is necessary for routine use of the software, or (3) the media (e.g., diskette size) is incompatible with the hardware configuration.

  If the software is installed on a hard disk, the vendor's master diskette will be considered the backup copy. In general, it is not necessary for end-users to make backup copies of NRC supported software.

- Both diskettes and fixed disks used on microcomputers are subject to occasional damage or failure and, hence data loss. Users sometimes inadvertently purge data files or programs. For these reasons, it is good operating practice for users to make backup copies of important data and applications programs which they write, even those limited to individual use.

- Backup copies of critical applications software and associated data should be placed in the NRC archival facility, where they will be retained under appropriate environmental conditions and will meet the requirement of storing the backup copy in a separate location from the working copy. Contact the Information and Records Management Branch for further information and procedures.

Security

- No classified information may be processed or stored on a mainframe, minicomputer, microcomputer, or word processor without the prior written approval, guidance and authorization of IRM/Computer Security.

- No sensitive information, including unclassified Safeguards Information (SGI), proprietary data, information which is withholdable from public disclosure under the "Privacy Act," FOIA, or other regulations, may be stored on systems with nonremovable disks without prior approval from IRM/Computer Security. If a computer system contains such information, it is the user's responsibility, and that of his or her supervisor, to review the appropriate security guidelines or consult with IRM for assistance. Diskettes containing sensitive information must be locked up when not in use and must be purged of all information before release for another purpose. Further written guidance on the protection, processing, and storage of classified or sensitive data on NRC microcomputers, mainframes, and word processors is available in NRC Appendix 2301, Parts I and II, and in Computer Security Brochures ("Security Guidance Outlines") available from the Computer and Telephone Operations Branch or from the Information Technology Services Support Center.

- Microcomputer hardware and software should be protected from possible damage or theft by taking reasonable precautions. Software should be controlled during business hours and locked up, if possible, at the end of the day. No hardware may be removed from NRC premises without a signed NRC Form 119 (Custodial Receipt for Sensitive Personal Property) or Form 466 (Property Pass). Software assigned to a computer should be kept with the machine during any move.

- All applications shall be developed in accordance with requirements contained in NRC Appendix 2301, Part II, Section A.6., "Security Measures of NRC Computer Centers and Unclassified Applications Systems."

Software Ownership

- All data or programs written and retained more than 30 days by NRC staff for government work are the property of the government and may be considered government records.

VIII. Disposal of Obsolete or Unsupported Software

Commercial Software

- Commercial software which is owned by the NRC, but which is no longer on the list of supported software may be retained until existing applications are converted. Users are encouraged to convert such applications to supported software as quickly as possible with advice from the ITS Support Center. IRM will provide assistance for the conversion of critical applications upon written request. No new applications should be developed with unsupported software. Once all applications have been converted, unsupported software should be returned to the Small Systems Branch for disposal.

Customized Software

- Obsolete applications software, including scientific codes and data, should be disposed of in accordance with the applicable NRC records disposition schedule (see NUREG 0910). If the schedule requires retention, the software and documentation should be provided to the NRC Information and Records Management Branch for storage in the NRC archival facility. Chapter NRC-0231 provides guidance for the disposition of agency records in electronic format.

Attachment 1

Development, Submittal, Distribution and Documentation Requirements for Machine-Readable Contract Deliverables

This document provides requirements for contractors developing software, data or other machine-readable deliverables for the Nuclear Regulatory Commission (NRC). Its purpose is to assure that any such deliverables can be readily implemented and used on NRC equipment and can, if required, be easily disseminated or transferred to other data processing sites. This implies the use of standard software packages, programming languages, and compilers which are compatible with the NRC hardware and software environment, as well as adherence to good programming and documentation practices.

This document applies to all machine-readable deliverables for use on microcomputers and to scientific applications for use on mainframes and minicomputers. Requirements for non-scientific applications for use on mainframes or minicomputers are provided by IRM on a case by case basis.

All computer applications and associated data developed under contract to the NRC or under a DOE laboratory agreement are the property of the NRC unless stated otherwise in the contract or DOE laboratory agreement. These items must be submitted to the NRC project manager in machine-readable form at or before contract completion. Microcomputer software and data deliverables should be supplied on compatible media and conform to the criteria stated in section 1 below. Mainframe or minicomputer software and data deliverables should be submitted on tape and conform to the criteria in section 2 below.

1. Deliverables for Use on Microcomputers

All deliverables developed for use on microcomputers must meet the following criteria unless a written waiver is obtained in advance from the NRC project manager and approved by the Director, Office of Information Resources Management (IRM):

a. Deliverables should be submitted on IBM PC-DOS compatible 3.5" or 5.25" diskettes.

b. All diskettes should be capable of use on an IBM PC or compatible microcomputer using NRC supported software. All programs developed for the NRC should be written with software available to the NRC.

c. In particular, documents (e.g., reports) should be provided in IBM Revisable-Form Text Document Content Architecture (RFT/DCA) format or 7-bit ASCII code (ANSI Standard X3.4-1977) if formatted text cannot be provided. This will allow document text to be used both on NRC microcomputers and word processing equipment.

d. All deliverables must be accompanied by documentation, including a printed copy of the directory, a description of each file in the directory and how it is to be used and installation instructions. Refer to sections 3 and 4 for software distribution and documentation requirements, respectively.

No microcomputer software or hardware may be purchased by a contractor or DOE laboratory for subsequent delivery to the NRC without written concurrence in advance by the NRC Project Manager and the Director, Office of Information Resources Management.

Updated information about software supported for use on NRC-accessible computer facilities and microcomputers may be obtained from the ITS Support Center.

2. Deliverables for Use on Mainframes or Minicomputers

These requirements apply to customized applications software and associated data deliverables intended for use on mainframes or minicomputers. All such deliverables must meet the following criteria unless a written waiver is obtained in advance from the NRC project manager and approved by the Office of Information Resource Management.

a. All new mainframe or minicomputer scientific programs developed or converted for NRC shall be written in American National Standards (ANS) FORTRAN (ANSI Standard X3.9-1978) or other language which can be compiled on NRC equipment.

b. Mainframe or minicomputer programs which generate plots must do so using the Display Integrated Software System and Plotting Language (DISSPLA). This graphics software is a standard at all DOE laboratories.

c. The recommended mathematical/statistical subroutines are the International Mathematical Statistical Libraries (IMSL).

d. Contracts involving the development of customized application software must first consider NRC supported software or readily available commercial software to meet functional requirements. Machine-dependent and installation-specific packages and features including assembly language should not be used.

e. Deliverables should be submitted on tape according to the following tape format requirements:

- Recording:	9-track
- Density:	1600 BPI
- Internal Tape Label:	No Label
- Character Code:	ASCII
- Record Size:	FIXED RECORD LENGTH (80 char/record preferred for source code when possible)
- Block Size:	FIXED BLOCK LENGTH (maximum = 2048 char/block)

- Tapes must be generated using system independent copy routines. Tapes must be made so as to be transportable from one computer system to another.

f. All tapes must be accompanied by documentation, including a copy of the job control language or job stream that created the tape, a list of the files on the tape, a description of each file and how it is to be used, and installation instructions. Refer to sections 3 and 4 for software distribution and documentation requirements, respectively.

g. Tapes should include the following files:

Source Code - Compiler input records

Sample Input - Test case input data.

Sample Output - Test case output data.

Data Libraries - External data files required for programming execution (e.g., cross-section libraries, dose conversion factors, etc.

Control Information - Operating system control language statements required for compilation and execution.

Optional files include object or load modules.

Questions concerning the above instructions should be addressed to the NRC Information Technology Services Support Center.

3. Distribution

Distribution of contractor-developed applications software and documentation will be performed under the guidance of IRM. IRM will assure that programmatic distribution requirements are met for public and non-public software. At present, most NRC software is being distributed by the National Energy Software Center at Argonne National Laboratory under a DOE laboratory agreement administered by IRM. Under certain circumstances, an NRC contractor or DOE laboratory may distribute scientific applications software while in the development or maintenance stages provided that:

a. The required distribution activities are explicitly specified in the contract or DOE laboratory statement of work;

b. The contract or DOE laboratory agreement specifies that the software and associated documentation will be transmitted to the NRC in approved form (per sections 1-4 of this attachment) upon termination of the contract or DOE laboratory agreement;

c. The Program Division Director has approved, in writing, the need for deviation from the standard distribution procedures;

d. The Director, Division of Information Support Services, IRM, has approved, in writing, the contract or DOE laboratory statement of work wherein the distribution activities are described.

Before release for distribution, NRC-sponsored software must be appropriately reviewed, tested, documented and approved for release by the sponsoring NRC office. It is the responsibility of the sponsoring NRC office to determine whether or not a computer code is ready for distribution and to clearly define the limitations to be imposed on said distribution (e.g., USA only, unlimited, or a specific distribution list). However, the sponsoring NRC office is advised that once information regarding a computer code has been published (e.g., in a NUREG-series report), members of the public may request a copy of the code and, under normal circumstances, the NRC must be prepared to distribute the code. Thus, the preparation of a distribution submittal package for the computer code and the publication and distribution of a NUREG-series report associated with the computer code should coincide. In order to prepare to meet these requirements once the contract is complete, the statement of work should include, as a requirement, the preparation of the submittal package necessary for requesting distribution by the National Energy Software Center (NESC). Copies of the NESC submittal forms, distribution procedures and advice regarding submittal package preparation may be obtained by calling the ITS Support Center. A copy of the NESC release form, signed by the Division Director of the sponsoring NRC office, should be sent to the Chief, Information Technology Services Branch, at the time the submittal package is sent to NESC.

4. Documentation and Publication Standards

All reports, including reports that contain applications software documentation, must conform to NRC Manual Chapters 1102, 3201, and 3202, which provide policy and publications standards. Copies of these manual chapters are available from the Distribution Services. DOE laboratory staff may obtain copies from their respective technical information offices. These manual chapters are entitled:

NRC 1102, "Procedures for Placement of Work with the Department of Energy"

NRC 3201, "Publication of NRC Staff-Generated Regulatory and Technical Reports"

NRC 3202, "Publication of Technical Reports Prepared by NRC Contractors, Including Reports Prepared Under or Pursuant to Interagency Agreements"

In addition, the content of all scientific applications documentation shall conform to ANSI Standard N-413, "Guidelines for Documentation of Digital Computer Programs." The major documentation requirements included in the standard are:

a) Computer Program Abstract
b) Application Information (User's Guide)
c) Problem of Function Definition (Theoretical Development)
d) Programming Information (Programmer's Guide)

A copy of this standard may be obtained from:

The American National Standards Institute
1430 Broadway
New York, New York 10018
ATTN: Sales Department

In addition to or instead of conforming to ANSI Standard N-413, documentation for some applications may be required to conform to NRC Microcomputer Application Documentation Standards and/or meet other requirements of the sponsoring office. Applicability of any additional requirements will be determined by the NRC Project Manager.

Each program developed for the Nuclear Regulatory Commission should include the following program title block and disclaimer in the main program:

Program Title:
Developed for: U.S Nuclear Regulatory Commission
Office of (fill in NRC Office)
Division of (fill in NRC Division)
Date:
NRC Contact(s): Phone:
Code Developer: Phone:
Title(s) of Associated Documentation and NUREG-Series Designator:

The program was prepared for an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibilities or any third party's use, or the results of such use, of any portion of this program or represents that its use by such third party would not infringe privately owned rights.