

1. CONTRACT (Proc. Inst. Ident.) NO. **NRC-01-79-008** 2. EFFECTIVE DATE **1 July 79** 3. REQUISITION/PURCHASE REQUEST/PROJECT NO. **OSD-79-010** 4. CERTIFIED FOR NATIONAL DEFENSE UNDER BDSA REG. 2 AND/OR DMS REG. 1. RATING

5. ISSUED BY CODE **U.S. Nuclear Regulatory Commission
Division of Contracts
Washington, D. C. 20555** 6. ADMINISTERED BY (If other than block 5) CODE 7. DELIVERY FOR DESTINATION NATION OTHER (See below)

8. CONTRACTOR NAME AND ADDRESS CODE FACILITY CODE 9. DISCOUNT FOR PROMPT PAYMENT

(Street, city, county, State, and ZIP code) **The New England Conference of Public Utility Commissioners
80 Dean Street
Providence, RI 02903** NET

10. SUBMIT INVOICES (copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK 17

11. SHIP TO/MARK FOR CODE 12. PAYMENT WILL BE MADE BY CODE

**U.S. Nuclear Regulatory Commission
Office of Standards Development
Washington, D.C. 20555
ATTN: Mr. G. D. Calkins** **U.S. Nuclear Regulatory Commission
Office of the Controller
Washington, D. C. 20555**

13. THIS PROCUREMENT WAS ADVERTISED, NEGOTIATED, PURSUANT TO: 10 U.S.C. 2304 (a)(1) 41 U.S.C. 252 (c)(1)(D)

14. ACCOUNTING AND APPROPRIATION DATA

B&R NO. 10-15-02-05 FIN B10189 \$50,000.00

15. ITEM NO.	16. SUPPLIES/SERVICES	17. QUANTITY	18. UNIT	19. UNIT PRICE	20. AMOUNT
	A STUDY ENTITLED "EVALUATION OF FINANCIAL ASSURANCE ALTERNATIVES FOR DECOMMISSIONING NUCLEAR REACTORS AND THEIR IMPACT ON RATES"				\$50,000.00

POOR ORIGINAL

525 306

21. ESTIMATED TOTAL AMOUNT OF CONTRACT **\$ 50,000.00**

CONTRACTING OFFICER WILL COMPLETE BLOCK 22 OR 26 AS APPLICABLE

22. CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 4 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.)

26. 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.

23. NAME OF CONTRACTOR BY **Dr. R. P. ...** (Signature of person authorized to sign)

27. UNITED STATES OF AMERICA BY **Kellogg V. Morton** (Signature of Contracting Officer)

24. NAME AND TITLE OF SIGNER (Type or print) **Dr. R. P. ...** 25. DATE SIGNED **6/27/79**

28. NAME OF CONTRACTING OFFICER (Type or print) **Kellogg V. Morton** 29. DATE SIGNED **7-13-79**

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Article I - Statement of Work

1.0 Background

The NRC has recently begun to examine all aspects of nuclear facility decommissioning. One such aspect concerns evaluating available alternatives to assure that licensees will have adequate funds to decommission their nuclear facilities. For reactor licensees, several alternatives have been suggested. NRC could require the following: (1) Nothing, by assuming that reactor licensees have sufficient long term financial strength to be able to generate necessary funds at decommissioning; (2) Payment of funds at the time of reactor licensing, either in cash or liquid assets, sufficient to cover all estimated decommissioning cost; (3) Annual payment of funds financed through depreciation (negative salvage) over the projected life of the reactor; (4) Provision of surety bonding or other financial instruments such as dedicated letters or lines of credit; (5) A pooled approach which could cover either total decommissioning costs for all licensees or only that portion of total costs not met by the licensee as a result of its default. Such a pool could be administered by NRC, by the current nuclear insurance pools (ANI, MAELU/MAERP, or NML), or by some other body; (6) Decommissioning costs paid out of general treasury funds by the federal government either through general revenues or through a "decommissioning tax" imposed on licensees. In addition, several variations and combinations of the above alternatives exist.

The NRC must evaluate these alternatives and most likely will propose regulations providing for assurance that funds for decommissioning will be available. NRC policy on funding decommissioning will have to take into account the degree of assurance that various options provide, the direct cost of the various options as measured in present value, the equity impacts on present versus future rate-payers, and other indirect factors such as administrative complexity, institutional feasibility, etc.

With respect to alternatives 2 and 3, the present value of funds set aside at the beginning or collected over the life of a nuclear reactor can vary significantly depending on the structure of the fund for any given level of decommissioning cost. For funds earning interest, the fund will grow at one rate if invested in the assets of the licensee; it will grow at another rate if invested in high-quality corporate securities; and at a yet another rate if invested in tax-free state and municipal bonds. Because of a compounded rate of return over the 30-40 year term of the license, even greater disparities in present value occur. Additionally, changing inflation rates will also affect the value of the fund as will the tax treatment afforded different funds by the IRS and state taxing authorities. Finally, a utility's accounting procedures, using either "flow-through" or "normalized" approaches to income tax liabilities, will affect the present value, and thus the cost to the rate-payer, of the option chosen.

Administratively, investor-owned utilities are regulated by their state public utility commissions (PUC's) and, if they engage in interstate operations, by the Federal Energy Regulatory Commission (FERC). The NRC should not expect or desire to establish decommissioning policy in sufficient detail to impinge on or conflict with state and federal rate-making authority. This situation is complicated by public utilities (i.e., municipals cooperatives, and state and federal agencies), which, although they are not often regulated by state PUC's or FERC, interface extensively with investor-owned utilities in the joint ownership of nuclear power plants. Further, in New England multiple owners of a nuclear power plant may be incorporated in different states, thus subjecting one plant's decommissioning costs to regulation by several state PUC's. The extent to which this complex ownership/regulatory structure combined with the funding parameters discussed above affects the methods the NRC should implement to assure the availability of decommissioning funds is the primary problem to which the NRC should address itself.

2.0 Work Required

The New England Conference of Public Utilities Commissioners, Inc. shall examine the problems as outlined above within the context of the New England regulatory environment and the structure of ownership of actual nuclear power facilities in New England. (i.e., Maine Yankee, Vermont Yankee, Millstone 1 & 2, Pilgrim 1, and perhaps others at the concurrence of the NRC Staff and the contractor) The study shall consist

of two phases. The first phase shall be an examination and evaluation of current analyses of methods for assuring funds for decommissioning. At a minimum, the contractor shall evaluate those sources contained in part B of the enclosed reference sheet. Evaluation of additional sources may be performed after the joint recommendation of the contractor and the NRC task leader. The evaluation shall consist of confirming the methodology used in the above-referenced reports, discussing their relevance to the New England utilities, and suggesting any alternative methodology which in the opinion of the contractor would be generally appropriate. Such evaluation shall be thoroughly documented and shall include a summary section addressed to those not versed in public utility accounting methodology.

The second phase shall consist of the contractor applying the methodology confirmed or developed in the first phase to rate impact studies modeled after the New England utility and rate environment. Assuming for this study decommissioning cost of \$50 million in 1978 dollars and a reactor life of 35 years, considering both immediate dismantlement and dismantlement delayed for 30 years, and using the parameters discussed above (i.e., variations in inflation rates; in interest and discount rates; in accounting methodology; and funding either at commissioning, at decommissioning, or over facility life), within the complex mix of ownership found in New England, using a sample of actual facilities, the contractor shall perform sensitivity analyses of alternative rate case scenarios. The contractor shall determine whether variations in decommissioning cost

estimates in the range of - 50% to + 100% will affect the relative cost of specific rate case scenarios considered in the test cases. The Contractor's findings shall be presented both in constant 1978 dollars and in nominal dollars. In addition, the Contractor shall address potential institutional/administrative problems including but not limited to: (1) appropriate mechanisms for payment of decommissioning costs by small-percentage owners of nuclear power plants (e.g., payment into individual trust funds or payment through the lead applicant into one trust fund per plant); (2) appropriate mechanisms for maintenance of funded reserves (i.e., Are there any unique legal, institutional, or tax barriers to a lead applicant holding reserves in a trust fund or through depreciation reserve to which smaller percentage owners would contribute?); and (3) situations such as with Vermont Yankee where ownership contracts are shorter than unit life. The work called for in the above statement of work shall be performed in accordance with the Contractor's proposal dated February 2, 1979. The Contractor's proposal referenced above is incorporated herein by this reference except that the period of performance is revised as set forth in Article II.

3.0 Reporting Requirements

The Contractor shall prepare and submit the following reports to the Commission. One (1) copy of each report shall be submitted to the Contracting Officer and two copies to the Contracting Officer's Authorized Representative (COAR). All reports shall be prepared in accordance with NRC Manual Chapter 3202.

- A. The Contractor shall submit monthly letter progress reports which shall describe the status of the project, ~~not~~ progress to date, identify anticipated problems, and specify costs incurred to date. These reports shall be submitted within (10) working days after the end of each month.
- B. The Contractor shall provide a report of approximately ten (10) pages on the first phase of the work. This report is due by August 31, 1979.
- C. A draft report on the phase two portion of the project shall be provided by October 31, 1979 and the phase two report shall include an executive summary of approximately ten (10) pages and a report of approximately fifty (50) pages plus an appendix of supporting data and calculations.
- D. The final report due by December 15, 1979 and shall be in a form suitable for photostatic reproduction.

4.0 Meetings and Travel

The Contractor shall be prepared to meet in Washington, D. C. twice for one day each trip to discuss the results of his study.

5.0 NRC - Furnished Material

The NRC shall furnish the following material.

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References to be forwarded to Contractor

A. For General information

1. Technology, Safety, and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station (NUREG/CR-130) R.I. Smith, et al., Battelle Pacific Northwest Laboratory, June 1978.
2. Letter from Charles A. Zielinski to Robert G. Ryan dated January 7, 1978 re New York approach.
3. Letter from T. K. Deboer to Robert Bernero dated September 1, 1978 re New York approach.
4. Letter from Helen O'Bannon to Robert Bernero dated October 11, 1978 re Pennsylvania approach.
5. Decision by Borad of Public Utility Commissioners dated September 1, 1977 concerning in part the method of providing for the decommissioning of nuclear power plants by Jersey Central Power and Light Company.
6. Decommissioning Cost Analysis Computer Routine, Barry Mingst LLWB/NMSS/NRC.
7. Costs and Financing of Reactor Decommissioning; Some Considerations Vincent L. Schwent, California Energy Commission, September 1978.
8. Plan For Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities; (NUREG-0436); March 1978, Division of Engineering Standards, Office of Standards Development, U. S. NRC.

B. For evaluation by contractor

1. Analysis of Decommissioning Arkansas Nuclear One - Unit 1. Report prepared by Arkansas Power & Light Company for the Arkansas Public Service Commission dated August 10, 1977.
2. Financing and Accounting Alternatives for Decommissioning Nuclear Plants, by Preston A. Collins, Senior Consulting Engineer, Gilbert Associates, Inc. Presented at New Orleans, Louisiana, September 28, 1978 to the Southeastern Electric Exchange.
3. Factors Affecting Nuclear Power Generating Station Decommissioning Options and Decommissioning Cost Recovery, Dr. N. Barrie McLeod and Mr. R. Jon Stouky, NUS Corporation. Presented to: Members and Conferees of the NARUC Subcommittee of Staff Experts on Accounting, Seattle, Washington, September 13, 1978.

Article II - Period of Performance

The period of performance shall commence on the effective date of this contract, estimated to be July 1, 1979, and continue for a period of six (6) months thereafter, to an estimated completion date of December 31, 1979.

Article III - Consideration

1. It is estimated that the total cost to the government for full performance of this contract will be \$50,000.00 on a cost reimbursement basis with no fee involved.

2. Total funds currently available for payment and allotted to this contract are \$50,000.00. For further provisions of funding see the General Provisions Clause No. 4, entitled "Limitation of Costs".

3. It is estimated that the amount currently allotted will cover performance of this contract which is estimated to be completed within six (6) months from the effective date of the contract.

Article IV - Allowable Cost/Compensation

Allowable cost and compensation for the Contractor's services under this contract shall be determined in accordance with General Provisions Clause No. 5, entitled, "Allowable Cost, Fee, and Payment," in Appendix A hereto and shall constitute full and complete compensation for the performance of the work under this contract.

Article V - Key Personnel

Pursuant to Clause No. 40, Key Personnel, the following individual is considered to be essential to the work performed hereunder:

Andrew Niven

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Article VI - Technical Direction and Authorized Representative

The following authorized representative will represent the Government for technical aspects of this contract:

Robert S. Wood

The authorized representative is not authorized to approve or request any action which results in or could result in an increase in contract cost. Any such action must receive the prior written approval of the Contracting Officer.

The authorized representative is responsible for: (1) Monitoring the Contractor's technical progress, including the surveillance and assessment of performance and recommending to the Contracting Officer changes in requirements; (2) interpreting scope of work; (3) performing technical evaluation as required; (4) performing technical inspections and acceptances required by this contract; and (5) assisting the Contractor in the resolution of technical problems encountered during performance. Within the purview of this authority, the representative is authorized to approve payment vouchers for supplies/services required under the contract. The Contracting Officer is responsible for directing or negotiating any changes in terms, conditions, or amounts cited in the contract.

For guidance from the authorized representative to the Contractor to be valid, it must: (1) be consistent with the description of work set forth in this contract; (2) not constitute new assignment of work or change to the expressed terms, conditions, or specifications incorporated into this contract; (3) not constitute a basis for an extension to the period of performance or contract delivery schedule; (4) not constitute a basis for any increase in the contract cost.

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Article VII - General Provisions/Alterations

- A. This contract is subject to the provisions of Appendix A, General Provisions, Cost-Type Research and Development Contract with Concerns Other than Educational Institutions, dated February 15, 1978, which is attached hereto and by this reference made a part hereof.
- F. In addition to those general provisions set forth in Appendix A hereto which are by their terms self-deleting, the following deletions and/or modifications to Appendix A are as follows:
1. Clause 23 entitled, "Nuclear Hazards Indemnity - Product Liability" is deleted in its entirety.
 2. Clause 53 entitled, "Private Use of Information and Data" is deleted in its entirety.