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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 12 1980

Westinghouse Electric Corporation
ATTN: Mr. G. Scholand, Manager
Nuclear Training Center
505 Shiloh Boulevard
Zion, Illinois 60099

Gentlemen:

The U. S. Nuclear Regulatory Commission (NRC) presently has underway a program to reassess its requirements regarding selection, training and licensing of all categories of personnel involved in the operation and maintenance of nuclear power plants. As a part of this program, the NRC has contracted an outside organization, Analysis & Technology, Inc., to provide an independent perspective regarding the requirements for operator licensing. In support of this effort, a survey team from Analysis & Technology will visit selected reactor sites and simulator facilities during the period of May 14 to June 27, 1980. The Westinghouse Training Center been selected as one of the facilities. Analysis & Technology would like to visit the facility June 2 - 4, 1980. The visit will be coordinated with a visit to the Zion Station.

The objective of these visits will be to collect information on NRC/industry requirements and practices regarding the selection, prescreening, training, examination, requalification and performance of control room operators, senior operators and other operational and maintenance personnel. Selection of these sites was based on a desire that they be representative of all existing facilities and provide an adequate sampling of different training programs. It is in no way intended for these surveys to constitute an audit of an individual facility's practices, but rather, that they provide a sampling of industry-wide practices for subsequent analysis.

The results of this analysis will lead to recommendations for changes to NRC/industry practices (where appropriate) which will provide increased assurance of the operational safety of nuclear power plants. The major parts of these surveys will consist of document research and personnel interviews. Survey teams will consist of from two to five people.

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Enclosure (1) provides a list of specific documentation desired to be made available, a list of personnel desired for interviews and additional support required for both reactor site and simulator facility visits. In addition, a proposed general schedule for the conduct of these visits is included.

A vital part of this research will consist of the determination of predictive indices of operator and trainee performance based on a collection of data from review of personnel training, performance and background records. These predictive indices will be used in the evaluation of selection and prescreening criteria and determination of prerequisites for advancement. Analysis & Technology personnel are authorized by the NRC to review these records. It is fully realized that these records are considered to be of a confidential nature. To maintain this confidentiality, prior to departure from the site, information collected from these records will be correlated to an individual by use of a letter-number code rather than the use of an individual's name, social security number, etc. Similarly, any information collected that is considered by the facility to be of a proprietary nature will be treated as such. Facilities are requested to follow their normal administrative procedures in granting release of these types of information (confidential and/or proprietary) to Analysis & Technology survey personnel.

Your cooperation in this effort is appreciated. If any questions arise, or the scheduled dates for visiting the sites are not satisfactory, please contact myself or Mr. Joseph Buzy at (301) 492-7486. For your information, we have requested a final report from Analysis & Technology by mid-December 1980. Therefore, it is necessary to complete the site visits by the end of June.

Sincerely,

Paul F. Collins, Chief
Operator Licensing Branch
Division of Human Factors Safety

Enclosure:
Information Sources and Support
Required for Reactor Site and
Simulator Facility Visits

cc w/o enclosures:
Mr. Larry T. Davis
Analysis & Technology, Inc.
Technology Park
P. O. Box 220
North Stonington, Connecticut 06359

Distribution:
OLB Facility File
OLB R/F
PFCollins
IE Resident Inspector

OFFICE	DHFS:OLB
SURNAME	PFCollins:jlv
DATE	5/12/80

FORM 26, JULY 1966 SERVICES ADMINISTRATION REG. (41CFR) 1-16.101		AWARD/CONTRACT		PAGE 1 OF 23
1. ACT Proc. Inst. Ident. / NO. NRC-03-80-117		2. EFFECTIVE DATE 7/1/80		3. REQUISITION / PURCHASE REQUEST / PROJECT NRR-80-117
4. CERTIFIED FOR NATIONAL DEFENSE UNDER DDSA REG. 2 AND/OR DMS REG. 1. RATING:		5. ISSUED BY U.S. Nuclear Regulatory Commission Division of Contracts Washington, DC 20555		6. ADMINISTERED BY (If other than block 5) CODE
7. DELIVERY FOR DESTINATION <input checked="" type="checkbox"/> OTHER (See below)		8. CONTRACTOR NAME AND ADDRESS (Street, city, county, State, and ZIP code) Analysis & Technology, Inc. Technology Park P.O. Box 220 North Stonington, CT 06359		9. DISCOUNT FOR PROMPT PAYMENT Net 30 days
10. SUBMIT INVOICES (4 copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK Article XVI		11. SHIP TO/MARK FOR U.S. Nuclear Regulatory Commission Division of Human Factors Safety, NRR ATTN: Paul F. Collins Washington, DC 20555		12. PAYMENT WILL BE MADE BY U.S. Nuclear Regulatory Commission Office of the Controller Washington, DC 20555
13. THIS PROCUREMENT WAS <input type="checkbox"/> ADVERTISED, <input checked="" type="checkbox"/> NEGOTIATED, PURSUANT TO: <input type="checkbox"/> 10 U.S.C. 2304 (a)(1) <input checked="" type="checkbox"/> 41 U.S.C. 252 (c)(1)				
14. ACCOUNTING AND APPROPRIATION DATA 10-19-02-02-3 31X0200.200 B-1091-0 Tasks IC, ID, IF (\$25,000) OBLIGATE 20-19-11-25 31X0200.100 B-6871-0 (\$75,000) \$99,740				
15. ITEM NO.	16. SUPPLIES / SERVICES	17. QUANTITY	18. UNIT	19. UNIT PRICE
	STUDY OF REQUIREMENTS FOR OPERATOR LICENSING (Fully-Funded cost-plus-fixed-fee contract)			
		Estimated Cost	\$91,507	
		Fixed-Fee	8,233	
		Total CPFF	\$99,740	
21. TOTAL COST-PLUS-FIXED-FEE \$99,740				
CONTRACTING OFFICER WILL COMPLETE BLOCK 22 OR 26 AS APPLICABLE				
22. <input checked="" type="checkbox"/> 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.)		26. <input type="checkbox"/> 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 V. Lehman Woods (Signature of person authorized to sign)		27. UNITED STATES OF AMERICA BY D.J. Dougherty (Signature of Contracting Officer)		
24. NAME AND TITLE OF SIGNER (Type or print) V. Lehman Woods Manager of Contracts		25. DATE SIGNED 7 May 1980		28. NAME OF CONTRACTING OFFICER (Type or print) D.J. Dougherty
				29. DATE SIGNED 5/10/80

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ARTICLE I - STATEMENT OF WORK

A. Background and Objective

The U. S. Nuclear Regulatory Commission (NRC) has presently underway a program to reassess its requirements regarding selection, training and licensing all categories of personnel involved in the operation and maintenance of nuclear power plants. As part of this program, the NRC requires an outside organization to provide an independent perspective regarding the requirements for operator licensing. The objective of this effort is to develop recommendations for significant improvements to the NRC/industry requirements and practices which will provide increased assurance of operational safety of power plants.

The scope of the work will result in recommendations for: (1) the means to be employed for selection and training of nuclear power plant personnel and the degree of NRC involvement in the process, (2) the means to be employed to evaluate the effectiveness of the training programs, including who, by job description, should be licensed, (3) methods to be employed to assure continued competency of plant personnel, including NRC involvement, (4) methods for maintaining a highly motivated and dedicated work force, and (5) means for rapidly requalifying presently licensed operators to meet the proposed new requirements.

B. Work Required

Provide all necessary personnel, facilities and any equipment to accomplish the following tasks:

- sk 1. Considering the selections and training of nuclear power plant personnel, provide a summary of findings, alternatives considered, and final recommendations for each of the following areas:
- a. Prescreening of applicants prior to their entry into each phase of the training programs to assure a high degree of successful applicants. Include criteria for interim evaluations to preclude further training. Include recommendations regarding NRC involvement in the process. Include in the investigation of current practices the degree of facility commitment to individuals who have gone through training and the possible reluctance of utilities to lose their investment.
 - b. Prerequisites for advancement of licensees from operator to senior operator status. Include recommendations regarding prescreening of individuals, whether licensed as operators or not licensed; including the desirability of requiring senior operator applicants to perform as licensed operators at an operating nuclear power plant for a specified period of time as one prerequisite. Recommend the degree of NRC involvement in this process.
 - c. Scope and relevance of training materials, subject matter, and time allotted to the subjects. Perform a job task analysis for licensed operators and senior operators that considers tasks required under normal, abnormal and emergency conditions and the associated knowledge and skills required

to perform the tasks. Include a review of the Scope of Examination enumerated in Sections 55.20 through 55.23 of 10 CFR Part 55, Operators' Licenses. Include recommendations regarding NRC involvement in the development of training programs and NRC current practices for implementing and enforcing the training requirements, including the extent of auditing.

- d. Investigate the use of nuclear power plant simulators in training programs and compare their use to in-plant training. Include recommendations regarding the use of product line simulators vs plant specific simulators. Include in this section recommendations regarding the present practice of qualifying "cold" operators, with no prior nuclear power plant operating experience, for initial operations at a new plant.
- e. Perform a job task analysis of all operating, maintenance and technical support personnel. Based on considerations of the health and safety of the general public and the impact on safe and competent operation, recommend additional personnel positions that should be certified, licensed or both.
- f. Recommend requirements for qualifications and methods for determining competency of instructors for each portion of all facility training programs.

- Task 2. Considering the regulations, procedures, practices used to evaluate the qualifications of personnel by utility management and NRC, provide a summary of findings, alternatives considered, and final recommendations for each of the following:
- g. The degree of facility licensee senior management involvement in personnel qualification programs, including the criteria used and the means employed by management to certify that a candidate is adequately prepared for an NRC examination. Include recommendations regarding the amount of training required for management to perform the above function.
 - h. The methods used by NRC to conduct written examinations, including variations in questions asked, time allowed to complete the examination and the use of pass/fail criteria.
 - i. The methods used by NRC to conduct oral/operating tests, including the depth of questions, the ability to ask follow-up questions, and the likelihood to have auditable results.
 - j. Develop criteria based on actual vs expected pass/fail rates that will measure the difficulty and comprehensiveness of the current NRC and utility qualification programs.
 - k. Investigate the present criteria for waiver of examinations pursuant to 10 CFR 55.7 and 55.24. Include the extent of use of waivers, experience of individuals waived, and approval authority for waivers.

Task 3. Considering the regulations, procedures, and practices employed by both NRC and utility management to assure continued competency of licensed individuals, provide a summary of findings, alternatives considered, and final recommendations for each of the following:

1. The scope and relevance of training materials, subject matter and time allotted for requalification programs. Particular attention should be given to the means employed to integrate operating experiences, Licensee Events Reports (LER) and abnormal occurrence reports into the programs.
- m. NRC practices for implementing and enforcing the training requirements, including the extent of auditing. Discuss the feasibility and advantages of unannounced questioning by the NRC and the utility of operators on an audit basis.
- n. Investigate the use of simulators in requalification programs vs. actual in-plant control manipulation. Include a study of the advantages and disadvantages of the use of plant specific simulators vs. product line simulators. Discuss the advantages and disadvantages of reserving (during operations and shut down) reactor time for conducting periodic casualty drills, including unannounced drills.
- o. Investigate the present means of recording and reporting of operator errors to the NRC and to utility senior management, and the identification of the individuals who make errors. Recommend means to factor this experience into training programs,

develop criteria for requiring requalification of individuals based on specific operating errors, develop methods of recording on-the-job proficiency of and performance, recommend criteria for NRC reexamination, and criteria for suspension and revocation of licenses.

- p. Investigate the means presently used to evaluate the effectiveness of the requalification programs. Consider the advantages of NRC administering requalification examinations (all vs. a percentage). Explore the use of technically expert NRC (Nuclear Reactor Regulation, Nuclear Regulatory Research) individuals to conduct parts of the examination in their specialties.

Task 4. Investigate foreign power reactors and review NUREG/CR-1280 for initial training requalification of operators whose duties are similar to those of presently NRC licensed operators and senior operators. Include recommendations regarding the applicability of some of these programs for requalifying plant operators.

Task 5. Through a comprehensive analysis, determine the adequacy of current NRC requirements and implementing guidance regarding preselection, training, examining and requalification. Assessment of adequacy shall include appropriate recommendations for modifications of these requirements, consistent with recommendations made in Tasks 1 - 4. Applicable regulations and Regulatory Guides are:

- (a) 10 CFR Part 55, Operators' Licenses.
- (b) 10 CFR Part 50, Domestic Licensing of Production and Utilization Facilities.
- (c) Regulatory Guide 1.8, Personnel Selection and Training.
- (d) Regulatory Guide 1.33, Quality Assurance Program Requirements.
- (e) Regulatory Guide 1.114, Guidance on being Operator at the Controls of a Nuclear Power Plant and
- (f) Regulatory Guide 1.134, Medical Certification and Monitoring of Personnel Requiring Operator Licenses.
- (g) Seven Commission Papers - SECY 79-330 through SECY 79-330F
- (h) NUREG-0094, NRC Operator Licensing Guide.
- (i) Regulatory Guide 1.16, Reporting of Operating Information Appendix A - Technical Specifications.

Task 6. Analyze and summarize the compensation and status of operators compared to other high technology fields, where similar responsibilities are exercised. Develop alternatives and final recommendations that will assist in the creation of a highly motivated and dedicated nuclear work force.

Task 7. Analyze, develop alternatives, and make a final recommendation for a means to be employed for the requalification of all present operators to meet any proposed upgraded requirements. Develop alternatives and make final recommendations as to what proposed requirements should be backfitted, and a projected schedule for completing the backfitting.

The Contractor shall consider the recommendations and conclusions presented in literature related to the project including, but not limited to,

- a. TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations, NUREG 0578 dated July 1979;
- b. Investigation Into the March 28, 1979 Three Mile Island Accident By Office of Inspection & Enforcement, Investigative Report No. 50-320/79-10, NUREG 0600 dated August 1979; and
- c. Reports from investigative bodies including the Presidential Commission (Kemeney) and NRC/TMI Special Inquiry Group (Rogovin).
- d. NUREG 0585, Lessons Learned Task Force Final Report
- e. ACRS Subcommittee Report on LER's

C. Reporting Requirements

- 1. Monthly progress letters shall be submitted (15 copies of each) to the CO within 10 days following the end of the period reported on and include:
 - a. Funds committed during the previous month* and cumulative expenditures to date.
 - b. Brief description of the work accomplished in the month, and projected activity for the next month.

* The first such report shall include a monthly projection of expenditures for the duration of the contract.

- c. Preliminary or interim results, conclusions or trends or other items thought to be of interest to the NRC.
 - d. Any problems or delays which may have been experienced or can be foreseen and specific recommendations for action to facilitate the execution of the contract work.
2. An interim report (15 copies) presenting the results of the completed work under Task 1, except Tasks 1e and f and the results of the completed work under Tasks 2-7, except Task 3 and Task 4 shall be submitted to the CO by May 15, 1980.
3. A final report (15 copies) presenting the results of the completed work under Tasks 1 through 7 shall be submitted to the CO by July 31, 1980. A draft version of the final report shall be submitted to the CO (five copies) by June 30, 1980 for review and comment. NRC will furnish its comments on the draft report no later than July 15, 1980. The final report shall be prepared in accordance with NRC Manual Chapter 3202, entitled, "Publications of Regulatory and Technical Documents Prepared by NRC Contractors." The report shall contain an executive summary of no more than ten (10) pages. This report shall include, but not be limited to, the following:

- c. Preliminary or interim results, conclusions or trends or other items thought to be of interest to the NRC.
 - d. Any problems or delays which may have been experienced or can be foreseen and specific recommendations for action to facilitate the execution of the contract work.
2. An interim report (15 copies) presenting the results of the completed work under Task 1, except Tasks 1e and f and the results of the completed work under Tasks 2-7, except Task 3 and Task 4 shall be submitted to the CO by August 15, 1980.
3. A final report (15 copies) presenting the results of the completed work under Tasks 1 through 7 shall be submitted to the CO by October 31, 1980. A draft version of the final report shall be submitted to the CO (five copies) by Sept. 30, 1980 for review and comment. NRC will furnish its comments on the draft report no later than Oct. 15, 1980. The final report shall be prepared in accordance with NRC Manual Chapter 3202, entitled, "Publications of Regulatory and Technical Documents Prepared by NRC Contractors." The report shall contain an executive summary of no more than ten (10) pages. This report shall include, but not be limited to, the following:

- a. Recapitulation of all findings, alternatives, and final recommendations developed for Tasks 1 - 7.
- b. Description of all work accomplished during the contract.
- c. Conclusions, trends, or other items thought to be of interest to NRC.

D. Meetings and Travel

Attend meetings, with attendant travel, as specified below:

Key personnel shall meet with the Project Officer (PO) at the NRC offices in Bethesda, Md. to brief the PO on the contract progress; the initial meeting shall occur within 2 weeks after the effective date of the contract; subsequent periodic meetings, estimated to number no more than four, may be held. Travel to central training centers and nuclear power plants to investigate training within the scope of this study.

It is estimated that the contractor will travel to approximately four training centers and approximately six nuclear power plants to determine actual training practices, interview personnel to determine the effectiveness of training and observe NRC examiners when conducting examinations.

The work called for in this Article I shall be conducted in Accordance with the Contractor's Technical Proposal dated December 26, 1979 and revision dated March 10, 1980 which by this reference are incorporated into & made a part of this contract.

ARTICLE II - Period of Performance

The period of performance shall be from the effective date of the contract through October 31, 1980 at which time all work shall have been completed and all reports shall have been delivered to the NRC as required by the Statement of Work.

ARTICLE III - Government-Furnished Material

The NRC PO shall furnish to the contractor five copies of each of the documents listed in Task 5 and TMI related reports. The documents will be furnished to the contractor on the effective date of the contract. One copy of NUREG/CR-1280 will be furnished to the contractor on the effective date of the contract.

If the above material, suitable for its intended use, is not so delivered to the contractor, the Contracting Officer shall, upon timely written request made by the contractor, and if the facts warrant such action, equitably adjust any affected provision of the contract pursuant to the procedures of the "Changes" clause of the contract.

ARTICLE IV - Protection of Proprietary and Company Information

If proprietary or company confidential data is provided to the contractor by the Government in connection with this contract, the contractor agrees to safeguard such information and agrees not to release such information to any person not directly involved in the performance of work under this contract unless such release is authorized in writing by the Contracting Officer. Upon completion or termination of this contract, all copies of any such proprietary or company confidential data shall be returned to the Commission.

ARTICLE V- Private Use Protection of Unclassified Government Information and Contract Information and Data

- (a) Except as specifically authorized by this contract, or as otherwise approved by the Contracting Officer, records, data, information, documents and material developed or acquired by or furnished to the contractor in the performance of this contract shall be used only in connection with the work performed under this contract. The contractor shall, upon completion or termination of this contract, transmit to the Commission all records or other information, documents and material, and any copies thereof, furnished by the Commission to the contractor in the performance of this contract.
- (b) The contractor shall be responsible for safeguarding from unauthorized disclosure any information or other documents and material exempt from public disclosure by the Commission's regulations and made available to the contractor in connection with the performance of the work under this contract. The contractor agrees to conform to all regulations, requirements, and direction of the Commission with respect to such material.
- (c) The contractor's duties under this clause shall not be construed to limit or affect in any way the contractor's obligation to conform to all security regulations and requirements of the Commission pertaining to classified information and material.

ARTICLE VI- Consideration and Payment

A. Estimated Cost, Fixed Fee and Obligation

- 1. It is estimated that the total cost to the Government for full performance of this contract will be \$99,740, of which the sum of \$91,507 represents the estimated reimbursable costs, and of which \$8,233 represents the fixed fee.
- 2. 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 performance of that work.
- 3. The amount presently obligated by the Government with respect to this contract is \$99,740.

B. Payment

The Government shall render payment to the contractor in approximately thirty (30) days after submission of proper and correct invoices or vouchers.

Additional provisions relating to payment are contained in clause 5 of the General Provisions hereto.

ARTICLE VII - OVERHEAD/GENERAL AND ADMINISTRATIVE RATES

- A. Pending the establishment of final overhead rates which shall be negotiated based on audit of actual costs, the contractor shall be reimbursed for allowable indirect costs hereunder at the provisional rate of .64% percent of Direct Labor Cost.
- B. Pending the establishment of final general and administrative rates which shall be negotiated based on audit of actual costs, the contractor shall be reimbursed for allowable indirect costs hereunder at the provisional rate of 14% percent of Total Estimated Costs.

ARTICLE VIII - PROVISIONS APPLICABLE TO DIRECT COSTS

Items Unallowable Unless Otherwise Provided

Notwithstanding Clause No. 5 --ALLOWABLE COST FEE AND PAYMENT, and Clause No. 10 -- SUBCONTRACT, of the General Provisions of this contract, unless authorized in writing by the Contracting Officer, the costs of the following items or activities shall be unallowable as direct costs:

1. Acquisition, by purchase or lease, of any interest in real property.
2. Special rearrangement or alteration of facilities.
3. Purchase or lease of any item of general purpose office furniture or office equipment.

ARTICLE IX - Responsibilities of the Project Officer

The Project Officer 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 the statement 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 preview 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 Project Officer 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 price.

If the Contractor receives guidance from the Project Officer which the Contractor feels is not valid under the criteria cited above, the Contractor shall immediately notify the Project Officer. If the two are not able to resolve the question within 5 days, the Contractor shall notify the Contracting Officer.

Paul F. Collins
this contract

is designated as the NRC Project Officer for

- (b) For guidance from the Project Officer 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 price.
- (c) If the contractor receives guidance from the Project Officer which the contractor feels is not valid under the criteria cited above, the contractor shall immediately notify the Project Officer. If the two are not able to resolve the question within five days, the contractor shall notify the Contracting Officer.

ARTICLE X - Technical Direction

- (a) The NRC Project Officer named in this contract is responsible for guiding the technical aspects of the project and for general surveillance of the work performed. The Project Officer is not authorized to make any commitments or any changes which constitute work not within the general scope of this contract, or constitute a basis for any increase in contract price or extension of the contract period of performance.
- (b) Technical direction must be within the general scope 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 clause of the General Provisions, entitled "Changes."
 - (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 to any of the expressed terms, conditions or specifications of the contract.
- (c) ALL TECHNICAL DIRECTIONS SHALL BE ISSUED IN WRITING BY THE PROJECT OFFICER OR SHALL BE CONFIRMED BY HIM/HER IN WRITING WITHIN TEN (10) WORKING DAYS AFTER VERBAL ISSUANCE. A copy of said written direction shall be provided to the Contracting Officer.

- (d) In the event the Project Officer desires a change to the contract within one or more of the categories as defined in (1) through (4) of paragraph B above, he/she must direct such requests to the Contracting Officer. The Contracting Officer will handle the request in accordance with applicable laws and regulations.
- (e) 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 its own funds for unallowable costs under the contract.

ARTICLE XI - KEY PERSONNEL

Pursuant to Clause No. 40 -- KEY PERSONNEL, the following individual(s) are considered to be essential to the work being performed hereunder:

Larry T. Davis
Thomas J. Mazour
Robert Zaret

ARTICLE XII - TRAVEL REIMBURSEMENT

1. The contractor will be reimbursed for reasonable domestic travel costs incurred directly and specifically in the performance of this contract and accepted by the Contracting Officer, in accordance with the contractor's approved travel policy on file with the NRC.
2. The cost of travel by privately owned automobile shall be reimbursed at the mileage rate prescribed by the contractor's established, generally applicable travel policy; provided, however, that such reimbursement shall not exceed the cost of less than first-class travel by common carrier.
3. The cost of travel by rented automobile shall be reimbursed on a reasonable actual expense basis that does not exceed the rates prescribed by the contractor's established, generally applicable travel policy.
4. All common carrier travel reimbursable hereunder shall be via economy class rates when available. If not available, reimbursement vouchers will be annotated that economy class accommodations were not available. First-class air travel is not authorized.
5. Reasonable actual costs of lodging and subsistence, or per diem in lieu of actual costs, shall be allowable to the extent that such actual costs or per diem amounts do not exceed the amounts or per diem rates prescribed by the contractor's established, generally applicable travel policy.
6. Receipts are required for common carrier transportation, lodging and miscellaneous items in excess of \$15.00.

7. Any revision to the contractor's established, generally applicable travel policy approved by the cognizant audit agency during the period of performance of this contract shall be effective, without formal modification to this contract, upon delivery to the Contracting Officer of a copy of such revised policy together with evidence of cognizant audit agency approval thereof.

ARTICLE XIII- ORDER OF PRECEDENCE

In the event of an inconsistency between the terms and conditions of the contract, the inconsistency shall be resolved by giving precedence in the following order:

1. The SCHEDULE: (Note: - Nothing contained in the Contractor's proposal, whether or not incorporated by reference, shall constitute a waiver of any terms or conditions provided in the SCHEDULE.)
2. The General Provisions
3. Other terms and conditions of the contract, whether incorporated by reference or otherwise.

ARTICLE XIV - UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL BUSINESS CONCERNS OWNED AND CONTROLLED BY SOCIALLY AND ECONOMICALLY DISADVANTAGED INDIVIDUALS

- (a) It is the policy of the United States that small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals shall have the maximum practicable opportunities to participate in the performance of contracts let by any federal agency.
- (b) The contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with the efficient performance of this contract. The contractor further agrees to cooperate in any studies or surveys that may be conducted by the Small Business Administration or the contracting agency which may be necessary to determine the extent of the contractor's compliance with this clause.
- (c) (1) The term "small business concern" shall mean a small business as defined pursuant to Section 3 of the Small Business Act and in relevant regulations promulgated pursuant thereto.

(2) The term "small business concern owned and controlled by socially and economically disadvantaged individuals" shall mean a small business concern -

BILLING INSTRUCTIONS FOR NRC COST-TYPE CONTRACTS

General. The contractor shall submit vouchers for cost-reimbursement in the manner and format described herein and as illustrated in the sample voucher.

Form. Claims shall be submitted on the payee's letterhead, invoice or on the Government Standard Form 1034, "Public Voucher for Purchases and Services Other Than Personal," and "Standard Form 1035, Public Voucher for Purchases Other Than Personal - Continuation Sheet." These forms are available from the Government Printing Office, 710 North Capitol Street, Washington, DC 20801.

Number of Copies. An original and six copies should be mailed to the NRC offices identified below.

Frequency. The contractor shall submit claims for reimbursement once each month unless otherwise authorized by the Contracting Officer.

Billing of Costs After Expiration of Contract. If cost-reimbursements are incurred during the contract period and claimed after the contract has expired, the period during which these costs were incurred must be cited.

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

Supersession. These instructions supersede all previous billing instructions.

Preparation and Itemization of the Voucher. The contractor shall furnish the information set forth in the explanatory notes below. These notes are keyed to the entries on the sample voucher.

(a) Payor's Name and Address. (i) Address the original voucher (with copies) to: U.S. Nuclear Regulatory Commission, Division of Accounting, Office of the Controller, ATTN: GOV/COM Accounts Section, Washington, DC 20555.

(b) Voucher Number. Insert the appropriate serial number of the voucher. This is to be in sequential order beginning with 001 as the number to be used for the first voucher submitted under this contract.

- (i) which is at least 51 per centum owned by one or more socially and economically disadvantaged individuals; or in the case of any publicly owned business, at least 51 per centum of the stock of which is owned by one or more socially and economically disadvantaged individuals; and
- (ii) whose management and daily business operations are controlled by one or more of such individuals.

The contractor shall presume that socially and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans, and other minorities, or any other individual found to be disadvantaged by the Small Business Administration pursuant to section 8(a) of the Small Business Act.

- d) Contractors acting in good faith may rely on written representations by their subcontractors as either a small business concern or a small business concern owned and controlled by socially and economically disadvantaged individuals.

ARTICLE XV - GENERAL PROVISIONS/ALTERATIONS

The General Provisions consist of Appendix A, "General Provisions-Cost-Type Research and Development Contracts with Concerns Other Than Educational Institutions", dated February 15, 1978, as modified below:

1. Clause 23 entitled, "Nuclear Hazards Indemnity Product Liability" is deleted in its entirety.
2. Clause 54 entitled, "Drawings, Designs, Specifications" lines 11 and 12 are modified by deleting the words beginning with "Subject to the..." and ending with "... its own uses", in their entirety.

- (c) Date of Voucher. Insert the date the voucher is prepared.
- (d) Contract Number and Date. Insert the contract number and the date of the contract.
- (e) Payee's Name and Address. Show the name of the contractor as it appears in the contract and its correct address; except when an approved assignment has been made by the contractor, or a different payee has been designated, then insert the name and address of the payee.
- (f) Contract Amount. Insert the total estimated cost of the contract, exclusive of fixed-fee. For incrementally funded contracts enter the amount currently obligated and available for payment.
- (g) Fixed Fee. Insert total fixed-fee (where applicable).
- (h) Billing Period. Insert the beginning and ending dates (day, month, and year) of the period in which costs were incurred and for which reimbursement is claimed.
- (i) Direct Costs. Insert the major cost elements
 - (i)(1) Direct Labor. This consists of salaries and wages paid (or accrued) for direct performance of the contract.
 - (i)(2) Fringe Benefits. This represents fringe benefits applicable to direct labor and billed as a direct cost. Fringe benefits included in direct costs should not be identified here.
 - (i)(3) Capitalized Nonexpendable Equipment. For educational institutions list each item costing \$1,000. or more; for contractors other than educational institutions list each item costing \$200. or more and having a life expectancy of more than one year. List only those items of equipment for which reimbursement is requested. A reference shall be made to the following (as applicable): (1) the item number for the specific piece of equipment listed in the Property Schedule; (2) the Contracting Officer's Approval Letter, if the equipment covered by the Property Schedule; or (3) be preceded by an asterisk (*) if the equipment is below the approval level. Further itemization of vouchers shall only be required for items having specific limitations set forth in the contract.
 - (i)(4) Materials, Supplies, and Noncapitalized Equipment. This is consumable materials and supplies and equipment other than that described in (i)(3) above.
 - (i)(5) Premium Pay. This is remuneration in excess of the basic hourly rate.
 - (i)(6) Consultants' Fee. These are fees paid to consultants.
 - (i)(7) Travel. Domestic travel is travel within the United States, its territories, possessions, and Canada; it should be billed

separately from foreign travel.

(i)(8) Other. List all other direct costs in total unless significant in amount. If significant, list cost elements and dollar amount separately, e.g., subcontracts.

- (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.
- (l) Amount Billed for Current Period. Insert the amount billed for the major cost elements, adjustment, and adjusted amounts for the period.
- (m) Cumulative amount from Inception to Date of this 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 amounts conceded by the contractor, outstanding suspensions, and disapprovals subject to appeal.
- (p) Grand Totals.

SAMPLE VOUCHER																																		
<p>(a) Payor's Name and Address The U. S. Nuclear Regulatory Commission Division of Accounting, CON Attention: Gov/Com Accts Section Washington, DC 20555</p>	<p>(b) Voucher No. _____</p> <p>(c) Date Voucher Prepared _____</p> <p>(d) Contract No. and Date _____</p>																																	
<p>(e) Payee's Name and Address ABC CORPORATION 100 Main Street Anywhere, U.S.A. "or" The National Bank, Anywhere, U.S.A. Assignee for ABC Corporation Anywhere, U.S.A. (When Payments are Assigned)</p>	<p>(f) Total Estimated Cost of Contract _____</p> <p>(g) Total Fixed-Fee _____</p>																																	
<p>(h) This voucher represents reimburseable costs from <u>July 1, 1977</u> through <u>July 31, 1978</u></p>																																		
<p>(i) Direct Costs</p> <p> (1)(1) Direct Labor</p> <p> (1)(2) Fringe Benefits</p> <p> (1)(3) Capitalized Nonexpendable Equipment</p> <p> (1)(4) Materials, Supplies and Noncapitalized Equipment</p> <p> (1)(5) Premium Pay</p> <p> (1)(6) Consultant's Fee</p> <p> (1)(7) Travel -- Domestic</p> <p> Foreign</p> <p> (1)(8) Other</p> <p> Total Direct Costs</p> <p>(j) INDIRECT COSTS</p> <p> _____ % of Direct Labor or Other Base (Formula)</p> <p>(k) FIXED-FEE EARNED (Formula)</p> <p>(n) Total Amounts Claimed</p> <p>(o) Adjustments</p> <p> Outstanding Suspensions</p> <p>(p) Grand Totals</p>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 60%;">(l) Amount Billed for Current Period</th> <th style="text-align: left; width: 40%;">(m) Cumulative Amount From Inception to Date of this Billing</th> </tr> </thead> <tbody> <tr> <td>\$ 3,400</td> <td>\$ 6,800</td> </tr> <tr> <td>600</td> <td>1,200</td> </tr> <tr> <td>5,000</td> <td>8,000</td> </tr> <tr> <td>2,000</td> <td>4,000</td> </tr> <tr> <td>100</td> <td>150</td> </tr> <tr> <td>100</td> <td>100</td> </tr> <tr> <td>200</td> <td>200</td> </tr> <tr> <td>200</td> <td>200</td> </tr> <tr> <td>-0-</td> <td>-0-</td> </tr> <tr> <td><u>\$11,600</u></td> <td><u>\$20,650</u></td> </tr> <tr> <td>4,000</td> <td>6,000</td> </tr> <tr> <td>700</td> <td>1,400</td> </tr> <tr> <td><u>\$16,300</u></td> <td><u>\$28,050</u></td> </tr> <tr> <td></td> <td>(1,700)</td> </tr> <tr> <td><u>\$16,300</u></td> <td><u>\$26,350</u></td> </tr> </tbody> </table>		(l) Amount Billed for Current Period	(m) Cumulative Amount From Inception to Date of this Billing	\$ 3,400	\$ 6,800	600	1,200	5,000	8,000	2,000	4,000	100	150	100	100	200	200	200	200	-0-	-0-	<u>\$11,600</u>	<u>\$20,650</u>	4,000	6,000	700	1,400	<u>\$16,300</u>	<u>\$28,050</u>		(1,700)	<u>\$16,300</u>	<u>\$26,350</u>
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