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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

AUG 17 1995

Science & Engineering Associates, Inc.  
ATTN: Ms. Ilene Colina  
Contract Administrator  
SEA Plaza  
6100 Uptown Boulevard, N.E.  
Albuquerque, New Mexico 87110

Dear Ms. Colina:

SUBJECT: TASK ORDER NO. 8, ENTITLED "REVIEW OF SEVERE ACCIDENT  
MITIGATION DESIGN ALTERNATIVES (SAMDA) FOR THE  
WESTINGHOUSE AP600 DESIGN" UNDER CONTRACT NO.  
NRC-03-93-032

In accordance with Section G.5(c) of the subject contract, entitled "Task Order Award," this letter definitizes the subject task order. This effort shall be performed in accordance with the enclosed Statement of Work.

Task Order No. 8 shall be in effect from August 16, 1995 through February 29, 1996, with a cost ceiling of \$52,342. The amount of \$48,269 represents the total estimated reimbursable costs, the amount of \$3,862 represents the fixed fee, and the amount of \$211 represents the facility's capital cost of money.

The accounting data for the subject task order is as follows:

B&R No.:	520-15-12-10-0
Job Code No.:	J-2254-5
Appropriation No.:	31X0200.520
BOC No.:	252A
Obligated Amount:	\$52,342
NRR Unique Identifier:	NR930328

The following individual is considered to be essential to the successful performance of the work hereunder: Frank Sciacca.

The Contractor agrees that such personnel shall not be removed from the effort under the task order without compliance with Contract Clause H.1, Key Personnel.

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Your contacts during the course of this task order are:

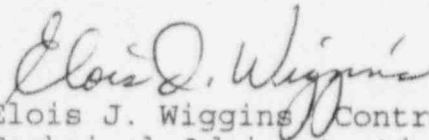
Technical Matters: Mr. Richard Brady  
Project Officer  
(301) 504-1188

Contractual Matters: Ms. Anita Hughes  
Contract Specialist  
(301) 415-6526

The issuance of this task order does not amend any terms or conditions of the subject contract.

Please indicate your acceptance of this task order by having an official, authorized to bind your organization, execute three (3) copies of this document in the space provided and return two (2) copies to the U.S. Nuclear Regulatory Commission, ATTN: Ms. Anita Hughes, Division of Contracts, T-712, ADM/DC/TAB2, Washington, D.C. 20555. You should retain the third copy for your records.

Sincerely,



Elois J. Wiggins Contracting Officer  
Technical Administration Branch No. 2  
Division of Contracts  
Office of Administration

Enclosure:  
As stated

ACCEPTED:

Elene B. Colina  
Name

Contract Administrator  
Title

7/21/95  
Date

Statement of Work for  
Task Order No. 8 Under JCN J-2002

Title: Review of Severe Accident Mitigation Design Alternatives (SAMDA) for the Westinghouse AP600 Design

NRC Project Manager: Richard Brady, ADAR 415-1188

NRC Technical Monitor: Dino C. Scaletti, PDST/ADAR 415-1104

TAC Number: M90294

B&R Number: 520-15-12-10-00

BACKGROUND

The U.S. Court of Appeals decision, in Limerick Ecology Action v. NRC, 869 F.2d 719 (3rd Cir. 1989), effectively requires the NRC to include consideration of certain severe accident mitigation design alternatives (SAMDA) in the environmental impact review performed as part of the operating license application. Also, Title 10 of the Code of Federal Regulations 50.34(f)(i) requires an applicant to "Perform a plant/site specific probabilistic risk assessment, the aim of which is to seek such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant."

The purpose of the two evaluations are to determine whether any design improvement or SAMDA need to be implemented for further reducing the environmental impacts of severe accidents. Although the Court's order and 50.34(f)(i) deal specifically with design alternatives for "mitigating" severe accidents, previous staff evaluations (for recently licensed plants as well as advanced reactor designs) have more broadly interpreted the scope of potential design improvements to include design alternatives for preventing severe accidents, accident management measures, and reliability assurance programs. Potential improvements expected to be evaluated include: engineering changes to risk-significant systems, structures, and mechanical components; improvements to technical specifications and in-service inspection activities; and improvements to emergency operating procedures.

Much work in the area of severe accidents has already been completed by NRC and will form a partial basis for the evaluation of 10 CFR 50.34(f)(i) and SAMDA for AP600. The NRC has sponsored analyses of severe accident progression and containment challenges as part of the NUREG-1150 study and the Severe Accident Research Program (SARP). Severe accident phenomena considered in these programs include direct containment heating, core concrete interactions, and steam explosions. In addition the staff is performing plant-specific assessments of severe accident phenomena/challenges for AP600. Westinghouse has the AP600 probabilistic risk assessment (PRA) of internally-generated events under review by the staff. It has also submitted an initial assessment of SAMDA for the AP600 design. Westinghouse did not specifically address 10 CFR 50.34(f)(i).

### OBJECTIVE OF PROPOSED WORK

The objectives of this project are to: (1) assemble and review all the work already accomplished relevant to SAMDAs for AP600, (2) perform supplementary analyses to assure the development of a comprehensive response to the Court's Order as it affects the AP600 design certification, (3) evaluate the applicant's corresponding analyses, and (4) prepare inputs to the AP600 safety evaluation report and the environmental assessment for the design certification rule.

### TECHNICAL AND OTHER SPECIAL QUALIFICATIONS REQUIRED

The contractor shall provide a responsible project leader and team members as is appropriate for the performance of the tasks. The project leader will be responsible for coordinating the efforts of the team members, performing project management duties, and ensuring the quality and schedule of deliverables, to assure that all of the information is accurate and complete.

It is the responsibility of the contractor to assign technical staff, employees, subcontractors, or specialists who have the required educational background, experience, or combination thereof to meet both the technical and regulatory objectives of the work specified in this statement of work (SOW). The NRC will rely on representations made by the contractor concerning the qualifications of the personnel assigned to this task order including assurance that all information contained in the technical and cost proposal, including resumes, is accurate and truthful.

### WORK REQUIREMENTS

The following tasks will be performed:

1. Review the AP600 information and prepare and deliver to the NRC a request for additional information if additional information is needed to evaluate the proposed design alternatives and SAMDAs. If no additional information is required, a letter to that effect should be sent to the NRC project manager. 4 weeks after authorization to initiate work
  
2. Prepare a draft technical evaluation of the 10 CFR 50.34(f)(i) alternatives and SAMDAs for the AP600 design, with an emphasis on the completeness of design alternatives considered by Westinghouse, and the reasonableness of the risk reduction and cost estimates for each candidate improvement. The previous staff assessments of SAMDAs for the Limerick plant and the GE ABWR advanced reactor design shall serve as a point of reference for this evaluation. In assessing Ten weeks after receipt of the additional information

completeness, SEA shall specifically consider (as candidate SAMDAs) those plant improvements or risk reduction strategies identified in the following documents: (a) The AP600 PRA and SAMDA submittals, (b) the Limerick, ABWR, and ABB-CE System 80+ SAMDA reviews, (c) The ABWR and System 80+ Safety Analysis Reports and Safety Evaluation Reports addressing 10 CFR 50.34(f)(i), (d) technical reports developed as part of the Containment Performance Improvement (CPI) program, (e) the accident management strategies identified in NUREG/CR-5474, and (f) the Watts Bar SAMDA evaluation (NUREG-0498, Supp 1). SEA shall factor into the assessment the impact of uncertainties in core damage frequency and risk estimates on the study findings, as well as the need for improvements to mechanical components and structures to accommodate seismic events.

Upon completion, SEA shall document the results of their assessment in a TER. The report shall include the following:

- an assessment of the adequacy of the Westinghouse evaluation of design alternatives and SAMDAs, in terms of completeness, reasonableness of results, and potential for further risk reductions
- identification of any additional SAMDAs which should be considered
- independent estimates of the risk reduction and costs for selected SAMDAs, as appropriate.

3. Incorporate NRC comments into a final TER and submit this report to the NRC.

Two weeks after receipt of NRC comments on the draft TER

#### LEVEL OF EFFORT

The level of effort is estimated at 3 professional staff-months.

#### MEETINGS AND TRAVEL

The following meeting and travel requirements are anticipated:

- One, 1-day one-person trip to Monroeville, Pennsylvania to meet with Westinghouse to obtain detailed design information. If needed.

NRC-FURNISHED MATERIALS

Any reports, documents, equipment, and other materials that the contractor will require to perform the work will be provided by NRC.

OTHER APPLICABLE INFORMATION

The work specified in this statement of work is licensee fee recoverable. Proprietary information should be protected from disclosure according to the provisions in NRC Manual Chapter-1102, "Procedures for Placement of Work with the Department of Energy."

PERIOD OF PERFORMANCE

This task order shall commence on August 15, 1995 and expire on February 29, 1996.