Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

MAY 0 7 1996

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of)
Tennessee Valley Authority)

Docket No. 50-390

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - NUCLEAR REGULATORY COMMISSION (NRC) - CONTRACT TV-68699A - ACOUSTIC EMISSION MONITORING SYSTEM (AEMS)

The purpose of this letter is to notify NRC of TVA's decision to terminate the subject contract. This decision has been made only after TVA has reviewed the AEMS contract terms, NUREG/CR-5963 and NUREG/CR-5645, and WBN Unit 1 implementation and support needs for completing the AEMS project. The enclosure provides a complete discussion on TVA's review and conclusion which supports the decision to terminate the contract.

In accordance with Article 3.5, as found on Page 4 of the subject contract, TVA has determined the AEMS will unreasonably interfere with plant maintenance and operations and hereby terminates this agreement. Accordingly, TVA does not intend to remit the final contract payment of $110,000. Please provide a breakdown of any related costs incurred by NRC or its subcontractor as direct costs associated with termination of the contract.

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If you need additional information or have any further questions, please call P. L. Pace at (423) 365-1824.

Sincerely,

D. V. Kehoe
Nuclear Assurance
and Licensing Manager

Enclosure
cc (Enclosure):

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ENCLOSURE

WATTS BAR NUCLEAR PLANT
NUCLEAR REGULATORY COMMISSION
ACOUSTIC EMISSION MONITORING SYSTEM
TVA CONTRACT NO. TV-68699A

I. BACKGROUND

The subject contract was established to provide for WBN's participation in the AEMS project sponsored by NRC, Office of Nuclear Regulatory Research, through Pacific Northwest Laboratory (PNL). This experimental research project was developed in the early 1970's to evaluate and validate techniques and procedures for the continuous online acoustical monitoring of reactors and piping for crack initiation and growth during operations. The AEMS was previously demonstrated on the Limerick Nuclear Station and documented in NUREG/CR-5963, "Continuous AE Crack Monitoring of a Dissimilar Metal Weldment at Limerick Unit 1," and NUREG/CR-5645, "Acoustic Emission/Flaw Relationships for Inservice Monitoring of LWRs." The TVA contract provides for a similar demonstration project for WBN Unit 1; however, the contract was not completed during the specified period (i.e., October 1, 1985 through September 30, 1988) as WBN did not achieve criticality during this period. The original AEMS contract terms including extensions have not been renegotiated.

The original AEMS scope required input from 23 sensors at four locations. These include six sensors located on the reactor vessel. Earlier conclusions determined that the sensors located on the reactor vessel were ineffective due to wall thickness and were removed from the project scope. The latest scope reduction has been provided in NRC's letter dated January 1, 1996. It proposed eight sensors at two locations around the number 2 reactor vessel nozzle.

II. MAINTENANCE AND DIAGNOSTIC SUPPORT

TVA has determined that completing the AEMS project and operational support of the AEMS would unreasonably interfere with plant personnel resources. Due to the extremely low signal level generated by the use of piezoelectric sensors through a waveguide, erroneous data from transients and extraneous noise would be difficult to prevent and time consuming to troubleshoot. As acknowledged in NUREG/CR-5963, the AEMS performance experienced at Limerick Unit 1 demonstrated an operating efficiency of 87 percent during the first monitoring period, but during the second monitoring period it fell to 26 percent. This was due to the lack of onsite AEMS specialists and a full workload for plant personnel in other areas. Although NRC would be primarily responsible for AEMS system, supporting activities on a continuing research project of this nature would impact plant resources. It is anticipated that WBN personnel would be called upon to support online maintenance and diagnostic support. In this respect, it appears the amount of time and plant resources have been underestimated in NRC's letter dated January 1, 1996.

III. (10 CFR 20) AS LOW AS REASONABLY ACHIEVABLE (ALARA)

The compartment around the number 2 nozzle is not accessible during Modes 1, 2, 3, and 4 due to the presence of extremely harsh environmental conditions. The compartment entryways are blocked by steel compartment plugs which are installed with large heavy anchors. At least one plug would need to be removed to gain access to the compartment below. Installation of the eight sensors requires removal and modification of mirror insulation inside the compartment around piping and the number 2 reactor vessel nozzle. Personnel time consumed for entry and inside the compartment to complete AEMS work will significantly increase personnel radiation exposures doses. Rates at the compartment entryways are estimated to be 100 to 120 mrem/hour. These rates increase to between 300 and 500 mrem/hour in the area around the number 2 reactor vessel nozzle. The location and tightness of the compartment offers little possibility for protective shielding. Also, additional personnel will be needed in the area to perform pre-work environmental surveys and erect scaffolding. These people will also be exposed to the same environment.

IV. INSTALLATION OF SENSORS

The acoustic monitoring waveguide sensors are not installed. WBN Unit 1 has achieved initial criticality. Higher temperatures and radiation associated with power operations will prohibit waveguide installation until scheduled unit outages (i.e., cool down periods). TVA is currently planning a limited outage in 1996; however, the existing scope of that outage would not make installation of the sensors practical. During the refueling outage, dedicated resources would be diverted from other outage work to install the AEMS sensors. The availability of personnel would likely prolong the outage at significant cost to TVA.

The first scheduled refueling outage will be in late 1997. Thus, if the contract were continued, the start of data collection would be significantly delayed until sometime in 1998.

V. INSERVICE INSPECTION PROGRAM

In accordance with Title 10 of the Code of Federal Regulations (CFR) Part 50.55a, TVA fulfills the requirements of American Society of Mechanical Engineers (ASME) Section XI, "Inservice Inspection and Augmented Nondestructive Examinations," for the reactor vessel and piping by conducting periodic examinations. Since the AEMS is a demonstration project, it does not relieve WBN of any inservice inspection duties under 10 CFR 50.55a(g).

VI. CONCLUSION

Based upon the diversion of maintenance and other personnel resources necessary to support project completion and operation of the AEMS, TVA has determined the AEMS will unreasonably interfere with plant maintenance and operations.