APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-602/88-03 Construction Permit: CPPR-123

Docket: 50-602 Expiration Date: December 31, 1987

Licensee: University of Texas
College of Engineering
Department of Mechanical Engineering
Nuclear Engineering Program
Austin, Texas 78712

Facility Name: Nuclear Engineering Teaching Laboratory (NETL) (TRIGA 1 Mw)

Inspection At: NETL Balcones Research Center, Austin, Texas

Inspection Conducted: June 16 and 17, 1988

Inspector: for R. E. Ireland 7/5/88
C. E. Johnson, Reactor Inspector, Plant Systems Section, Division of Reactor Safety Date

Approved: R. E. Ireland 7/5/88
R. E. Ireland, Acting Chief, Plant Systems Section, Division of Reactor Safety Date

Inspection Summary

Inspection Conducted June 16 and 17, 1988 (Report 50-602/88-03)

Areas Inspected: Routine, announced inspection of the shield wall concrete placement for the NETL facility.

Results: Within the areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

*J. W. Green, Construction Inspector, NETL
B. Webb, Senior Project Manager, Construction Incorporated of Texas (CIT)
*T. L. Bauer, Assistant Director, NETL
J. McFarland, Project Superintendent, CIT, Construction
*C. Estes, Engineer, Wilson Stoeltje Martin, Inc.
*M. Crane, Engineer, GA Technologies

*Denotes individuals contacted for exit interview.

2. Observation of Nuclear Engineering Teaching Laboratory (NETL) Under Construction

The purpose of this inspection was to observe construction practices and placement of concrete for the first lift of the shield wall of the TRIGA Mark II reactor. The first lift was to be 8 feet with no construction joint.

a. Specification Review

The NRC inspector reviewed the "Specification for NETL Balcones Research Center," Project No. 102-568, dated September 15, 1986. This specification was developed for the total construction of the NETL. The NRC inspector reviewed Section 13100 of the specification, which contained the concrete and reactor tank criteria.

Review of the specification indicated that the criteria used were referenced from the standard ACI concrete codes such as ACI 318, "Building Code Requirements for Reinforced Concrete," and ACI 301, "Specification for Structural Concrete for Buildings." Although this specification was not in detail in all respects, it did reference the codes which were used in the work performed. The specification was determined to be adequate.

b. Observations

° Tank

The NRC inspector and the CIT senior project manager entered the reactor tank to observe if sufficient bracing and support was installed inside the tank to preclude any deformation when concrete is placed around the outer perimeter. Observations indicated that adequate support bracing was installed.

The NRC inspector also examined the outer protective coating on the tank and the orientation and layout of the beamports. The protective coating appeared to be of the type specified, and the beamports were properly oriented and adequately supported.

Placement

The NRC inspector examined the general configuration and stability of the form work for the placement. Examination of the reinforcing steel indicated that the installation, size, and spacing was in accordance with the detail drawings. There was one location where the reinforcement did not meet the minimum 1½-spacing criteria; however, the constructor corrected the situation. The NRC inspector considered this to be an isolated case. Observation of the overall cleanliness indicated that more work was needed. The CIT constructor informed the NRC inspector that final cleaning had not taken place. The constructor stated that final cleaning would be done with a high pressure water nozzle several hours prior to placement. The NRC inspector then questioned the presence of what appeared to be coal-tar residue on the floor which was left after the application to the reactor tank. The CIT construction superintendent told the NRC inspector that he had informed GA Technology of this issue also. The GA Technology engineering representative at the site informed the NRC inspector that small amounts of residue would not affect the placement. He also stated that he would examine the placement after final cleaning and make a judgement as to whether or not the cleanliness was adequate. If not, then the surface would be chipped or ground clean. The NRC inspector informed the licensee that if large amounts of coal-tar residue were left in place following the final inspection, then documented changes to the specification or a field change request justifying and approving the condition would be necessary.

A telephone conversation with Mr. Tom Bauer, NETL, on June 20, 1988, at approximately 12:15 p.m. confirmed that after final cleaning the coal-tar residue was removed. Final cleaning was not observed by the NRC inspector. The placement of 100 yd^3 was made between 12:00 a.m. and 5:00 a.m. on June 18, 1988. Discussions by telephone with Mr. J. Green, NETL construction inspector, on June 20, 1988, indicated that concerns raised by the NRC inspector were corrected and were verified by Mr. Green.

No violations or deviations were identified.

2. Exit Interview

The NRC inspector discussed the results of the inspection with those individuals noted in paragraph 1 on June 17, 1988.