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John H. Garrity
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APR 30 1992

WBRD-50-390/91-03 10 CFR 50.55(e)

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

Gentlemen:

In the Matter of the Application of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - ADVERSE TREND OF FOREIGN MATERIAL IN PLANT SYSTEMS - WBRD-50-390/91-03 - FINAL REPORT

The subject deficiency was initially reported to NRC Region II on February 15, 1991, in accordance with 10 CFR 50.55(e) as Condition Adverse to Quality Report WBP 910145 Revision 0 (now WBP 910145SCA). TVA provided an interim report on March 20, 1991, and an extension of final report on September 27, 1991. Enclosed is TVA's final report.

If there are any questions, please telephone P. L. Pace at (615) 365-1824.

Sincerely,

John H Garrity

John H. Garrity

Enclosure
cc: See page 2

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APR 30 1992

cc (Enclosure):
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ENCLOSURE

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1
ADVERSE TREND OF FOREIGN MATERIAL IN PLANT SYSTEMS
WBRD-50-390/91-03
SCAR WBP 910145SCA
10 CFR 50.55(e) FINAL REPORT

DESCRIPTION OF DEFICIENCY

As a result of an extent of condition review concerning foreign material entry into the Residual Heat Removal System (RHR) (System 74), TVA determined the internal cleanliness of plant systems had not always been properly maintained. On January 7, 1991, during preparation for a primary system flush for the RHR System, a large mirror and a significant amount of other debris were discovered in the suction piping to the RHR 1A-A pump. The investigation into this incident revealed an adverse trend of foreign material existing in plant systems. Examples of such debris had been documented in previous corrective action documents including maintenance requests (MRs) and condition adverse to quality (CAQ) reports. Several CAQ documents issued concerning foreign material in plant systems include WBP 910019, WBP 900383, WBQ 900167, and WBP 910061 which relate to foreign material in Systems 31 (heating, ventilation, and air conditioning), 67 (Essential Raw Cooling Water [ERCW]), 70 (Component Cooling System), and System 74.

Generally, a preoperational test or construction completion program would include sufficient cleaning and flushing activities to ensure systems are in the required state of cleanliness prior to operation. At WBN these activities were performed as part of construction completions. The maintenance of system cleanliness subsequent to these activities was intended by placing plant systems in use, in a layup preservation mode, or by subjecting systems to specific cleaning and flushing controls during modification and maintenance work. TVA determined these latter work controls were not always appropriately implemented.

The causes of this deficiency are: (1) ambiguity regarding required cleanliness controls, coupled with the failure of management to clearly define expectations for cleanliness controls; and (2) unclear procedural requirements.

The deficiency is not applicable to Unit 2 since initial cleanliness verifications for Unit 2 must still be performed.

SAFETY IMPLICATIONS

The extent of this deficiency is indeterminate but could apply to all safety-related systems. The deficiency would have had minimal consequences for the systems TVA had committed to flush prior to operation under WBN's Prestart Test Corrective Action Program (CAP). These systems included those directly interacting with the Reactor Coolant System. The Prestart Test CAP has since been withdrawn - See discussion herein.

However, the presence of foreign material in safety-related systems and the failure to detect such material prior to plant operation could result in the failure of safety-related equipment to perform its design function, and thus, adversely affect safe plant operation.

CORRECTIVE ACTION

To clearly define management's expectation concerning controls for cleanliness and foreign material exclusion, several comprehensive initiatives including procedure development and site-wide training were implemented. Included was a strengthening of the WBN procedural program for control of foreign material during work activities. Site Standard Practice (SSP)-12.08, "Foreign Material Exclusion," was developed to provide specific requirements for work planning, preparation, and performance including detailed checklists for the consideration of exclusion controls. In addition to these general controls, detailed guidance is provided for major equipment areas such as the Reactor Coolant System and the spent fuel pit. Site administrative procedures for control of maintenance, modifications, and testing invoke the use of SSP-12.08 as necessary to prevent foreign material entry into plant systems.

To communicate these procedural requirements and management expectations, training was conducted for plant and modifications personnel who plan work activities which could affect system cleanliness. The training was also provided for Quality Control inspection personnel involved in cleanliness inspections and for craft foremen and craft personnel as directed by their supervision. During the NRC's construction restart inspection for WBN (November 1991), NRC reviewed TVA's recurrence controls in this area and found them to be appropriate (reference NRC Inspection Report 50-390, 391/91-31, January 13, 1992).

To provide assurance that plant systems are clean prior to fuel loading activities, TVA had previously discussed (Interim Report) a plan for system assessments to determine which systems under WBN's Prestart Test CAP required additional cleaning/flushing activities. However, as a result of TVA's recent decision to withdraw the Prestart Test CAP and reperform a Preoperational Test Program under Regulatory Guide (RG)-1.68 (Revision 2)[1], the previous approach is unnecessary. As discussed in WBN's Final Safety Analysis Report (FSAR) Chapter 14, TVA will now assure cleanliness of safety-related plant systems under the Component/Preoperational Test Program. This program provides assurance that an appropriate cleaning/flushing process will be implemented for safety-related systems meeting the requirements of RG-1.68 (R2) and ANSI N45.2.1-1973.

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1. TVA letter to NRC, "Withdrawal of Corrective Action Program (CAP) Plan for Prestart Test Program," February 13, 1992.