



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report No.: 50-553/78-08 and 50-554/78-08

Docket No.: 50-553 and 50-554

License No.: CPPR-162 and CPPR-163

Category: A2 and A2

Licensee: Tennessee Valley Authority
830 Power Building
Chattanooga, Tennessee 37401

Facility Name: Phipps Bend Nuclear Plant,
Units 1 and 2

Inspection at: Phipps Bend Site, Hawkins County, Tennessee

Inspection conducted: November 27-30, 1978

Inspectors: R. W. Wright

Reviewed by:

A. R. Herdt
A. R. Herdt, Chief
Projects Section
Reactor Construction and Engineering Support Branch

12/30/78
Date

Inspection Summary

Inspection on November 27-30, 1978 (Report Nos. 50-553/78-08
and 50-554/78-08)

Areas Inspected: Routine, unannounced inspection, observation of turbine building concrete placement (Unit 1); geological site review; QA records review; follow-up action on possible generic vendor welding problems; observation of cadwelding and rebar placement (Unit 1); follow-up action on licensee identified items; handling of IEB's and IEC's; review of concrete implementing procedures. The inspection involved a total of 27 man-hours on-site by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

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DETAILS I

Prepared by: R. W. Wright 12/26/78
R. W. Wright, Principal Inspector
Projects Section
Reactor Construction and Engineering
Support Branch
Date

Dates of Inspection: November 27-30, 1978

Reviewed by: A. R. Herdt 12/20/78
A. R. Herdt, Chief
Projects Section
Reactor Construction and Engineering
Support Branch
Date

1. Persons Contacted

a. Tennessee Valley Authority (TVA)

- *W. P. Kelleghan, Project Manager
- *G. Wadewitz, Construction Engineer
- J. C. Coefield, QC-Materials and Civil Supervisor
- A. P. Avel, Project Geologist
- J. Houck, Storage Records Clerk, DCU
- J. A. Harju, Assistant Construction Superintendent, 2nd Shift
- T. E. Adams, QC, Materials and Civil Inspector
- T. J. Moore, QC, Materials and Civil Inspector
- C. A. Spoons, QC, Materials and Civil Inspector
- C. R. Davis, QC, Materials and Civil Inspector
- D. J. Vanover, QC, Materials and Civil Inspector
- G. N. Furgarino, QC, Materials and Civil Inspector
- *W. K. Burner, QC, Welding Supervisor
- J. E. Rose, QC, Welding Engineer
- W. R. Bailey, QC, NDE Supervisor
- *E. J. Barnett, Project Engineering, Mechanical Supervisor
- *D. P. Burrell, OEDC, QA Electrical Engineer
- *T. G. Tyler, ENDES, Licensing, Licensing Engineer
- *J. Wills, Reg. Staff, OP, Licensing
- *B. Page, Construction, DCU
- *D. E. Hitchcock, Construction, QA Supervisor
- *G. H. Poaisden, Project Engineering, Mechanical

*Denotes those present at the Exit Interview conducted on
November 30, 1978.

2. Licensee Action on Previous Inspection Findings

This area was not inspected.

3. Unresolved Items

There were no new unresolved items identified during the inspection.

4. Independent Inspection Effort

a. Concrete Placement - Turbine Building No. 1 - Radwaste
Pipe Trench Wall - Pour No. T1-F47

The RII inspector observed and examined the following items during the subject (201.5 BFW) concrete fill placement:

- (1) Preplacement inspection
- (2) Partial delivery and placement of the pour
- (3) Sampling and testing of the concrete mix
- (4) Sampling and testing of aggregates (sand and 3/8 inch aggregate)
- (5) Aggregate, cement and fly ash storage conditions
- (6) Batch plant operations
- (7) Certification records for four concrete QC inspectors

All work was found to be accomplished in accordance with drawing 4YE0305-Y1-01 and procedures QCIC-201, C-204, C-205, C-208 and CEP-9.02. The concrete QC inspectors were certified in accordance with procedure CEP-2.10.

Within the above areas of inspection, no items of noncompliance or deviations were identified.

b. Geologic Fault in Unit 2 Fuel Building Excavation

TVA notified NRR and RII on November 14, 1978 and November 22, 1978, respectively, that another fault similar to those already disclosed was found November 8, 1978, located in the East wall of Unit 2's fuel building excavation. The RII inspector accompanied by TVA's project geologist visually examined this feature. A copy of the project geologist's report (which was forwarded to NRR on

November 13, 1978) with attached map and photo describing the subject fault was made available to the RII inspector. TVA has refrained from placing concrete or conducting any detrimental excavations in the area and plans to continue to do so until December 1, 1978, permitting NRR geologists to examine this feature if they so desire.

c. Stellar Manufacturing Company (SMC) - Contract 77K71-820116
Weirwall Liners for Reactor Building and Contract 76K70-
820118 Fuel Pool Liners

SMC has the above mentioned contracts for both the Hartsville and Phipps Bend projects. TVA made the commitment to inspect Stellar components that are at the Hartsville and Phipps Bend sites and to submit a full report on them to their Engineering Design (Reference: TVA's Final Report on NCR 921 (50.55(e)), item dated November 6, 1978). Hartsville was requested by TVA's Design Project Manager (memorandum CEB 78 1020 024) to perform visual examination of the welds performed by Stellar on the weirwall structures that have been shipped to them and to report back their findings. Hartsville transmitted their conclusions of evaluation of the weld quality performed by Stellar in their memorandum (HTN 78 11 16 112) dated November 16, 1978 to Mr. H. C. Russell.

Weirwall liner plates have been received and are currently in storage at the Phipps Bend site. RII examination into this matter revealed that the site has not received any request from Engineering Design to date nor has any provision been made to inspect these Stellar components.

This matter has been identified to the licensee and will be carried as an inspector follow-up item 553-554/78-08-01.

5. Containment (Structural Concrete I) - Observation of Work
and Work Activities, Unit 1

The inspector observed the placement of radial steel bars in layer No. 5 and the cadwelding of No. 18 reinforcing steel in the 4th circumferential layer (hoop) of the bottom mat for Unit 1's reactor building. The certifications of cadweld operators for crews C and F were examined and found to be in accordance with procedure CEP-2.12. Discussions were conducted with the cadwelding QC inspection personnel present and their qualifications and certifications were examined. Controlling drawings and procedures examined by the inspector were:

- a. Drawing Numbers 4YE0305-Y1-03; Y002; 10N352, S001; S009

- b. Procedures QCI-C-207, 401, 402; CEP-2.12

Within the above areas of inspection, no items of noncompliance or deviations were identified.

6. Quality Assurance Records

Construction Engineering Procedure CEP 17.01 requires all project engineering unit supervisors to prepare a listing of the safety-related systems, components, (items) within his cognizance. Likewise, the above procedure requires all QC unit supervisors to prepare a listing of all QA records to be maintained using the above listing. The above mentioned listings (systems, components, items and QA records) were to be forwarded to the Document Control Supervisor. The RII inspector examined the above listings that existed in the document control room for the following QC disciplines: civil, mechanical, welding and electrical. The completeness of these listings were found to be commensurate with the status of the project.

Within the above area of inspection, no items of noncompliance or deviations were identified.

7. Licensee Identified Items 50.55(e)

Prior to this inspection, the licensee identified several items which were considered potentially reportable under 10 CFR 50.55(e). The items are as follows:

- a. (Open) Item 553-554/78-03-01, Lack of Procedures for Review of Certain Design Activities

TVA submitted interim reports on February 6, July 3, August 28 and a final report on this subject deficiency dated October 30, 1978. The corrective action which is specified to be completed by January 15, 1979 will be examined on a subsequent inspection.

- b. (Open) Item 553-554/78-03-03, GE Design Deficiency Safety Valve Control Systems

Discussions conducted with TVA indicated no change in status of this item since their second interim report dated May 11, 1978. A final report will be submitted by TVA when the material presented to NRR by GE gets staff review and approval.

c. (Open) Item 553-554/78-08-02, Personnel Airlock Components
Procured to Non-Safety Class 2 Requirements

The licensee identified the subject deficiency to RII on October 6, 1978 and has submitted an interim report on the matter dated November 2, 1978. TVA is working with GE and C. F. Braun in investigating this NCR to determine the safety implications, extent of use of non-ASME components on the airlocks, the cause of the nonconformance and in developing corrective action and precautions to prevent recurrence. TVA plans to submit another report on this subject on or before February 15, 1979.

8. IE Bulletins and Circulars

Discussions conducted with responsible management personnel revealed that when IEB's and IEC's are received on-site they are reviewed by the project manager and/or the construction engineer and copies are then sent to the affected site disciplines. The RII examined applicable IEB's 78-05 through 78-12A and IEC's 78-02 through 78-16 and found the above review cycle had been implemented.

a. (Closed) IEB 78-10, Bergen-Paterson Hydraulic Shock Suppressor
Accumulator Spring Coil

TVA's letter of August 14, 1978 states that the hydraulic shock suppressor accumulator spring coils of the type described in IEB 78-10 are not existing in, nor part of the equipment on order for the PBNP. RII has no further questions regarding the matter at this time.

b. (Open) IEB 78-12 and IEB 78-12A, A Typical Weld Material
in Reactor Pressure Vessel Welds

TVA's response to this Bulletin is due March 24, 1979.

9. Review of Concrete Implementing Procedures

The RII inspector reviewed Quality Control Instruction QCI C-208, Revision 4, which is a derivative of TVA's G-2 Specification for Plain and Reinforced Concrete, Revision 2 and the PSAR commitments pertaining to sampling for concrete compressive strength cylinders.

Section 3.8.3.1.6.1, subsection 2.c of the PSAR states in part, "the vast majority of TVA concrete is produced in a central mix plant where the provided frequency appears excessive. It exceeds the recommendations of ACI 214 and the requirements of ACI 318".

Contrary to the above PSAR statement ACI 318-71 appears more restrictive than TVA's QCI C-208, Revision 4. Section 4.3.1 of ACI 318-71 states in part, "Samples for strength tests of each class of concrete (design mix) shall be taken not less than once a day nor less than once for each 150 cubic yards of concrete". QCI C-208, Revision 4 on the other hand, does not address its sampling frequency in terms of concrete class (mix design) but rather to specified strengths which includes many classes of concrete. Consequently, random sampling at TVA's specified cubic yard intervals (300, 200, 150) for the respective specified strengths does not ensure that each class of concrete is sampled at that interval when two or more mixes of the same specified strength are produced as required by ACI 318.

Additionally on shifts (16 hour period) when 3 or more classes of concrete are produced, none of which exceeds 100 cubic yards, one or more of these classes of concrete is permitted to go unsampled by QCI C-208. This is not permitted by ACI 318.

The inspector expressed his concerns on this matter at the exit interview conducted November 30, 1978, and stated pending further research, discussions with RCI and NRR headquarters personnel he would notify the licensee on how this matter would be handled in his inspection report.

Since the above mentioned specification and QCI controlling concrete sampling appears to be less restrictive than ACI 318-71 requirements, the licensee was subsequently telephoned on December 19, 1978 and informed that this matter would be addressed in this report as Unresolved Item No. (553-554/78-08-03).

10. Exit Interview

The inspector met with licensee representatives denoted in paragraph 1 on November 30, 1978, at the conclusion of the inspection. The licensee was apprised of the scope and findings of the inspection which included a concrete placement, review of site geological conditions, QA records review, follow-up action on possible generic vendor welding problems, observation of cadwelding and rebar placement, follow-up action on licensee identified items, handling of IEB's and IEC's and the inspector's specific concern that existing specifications and instructions for controlling concrete compressive strength sampling failed to meet ACI 318-71 requirements (paragraph 9). After subsequent RII inspector research and evaluation, the licensee was informed by telephone on December 19, 1978 that this matter would be identified as an Unresolved Item (553-554/78-08-03, Inadequate concrete sampling specification and instruction) in this report.