

UNITED STATES  
ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS  
REGION II - SUITE 818  
230 PEACHTREE STREET, NORTHWEST  
ATLANTA, GEORGIA 30303

TELEPHONE (404) 826-4503

FEB 22 1974

In Reply Refer To:  
RO:II:LEF  
50-390/74-1  
50-391/74-1

Tennessee Valley Authority  
ATTN: Mr. J. E. Watson  
Manager of Power  
818 Power Building  
Chattanooga, Tennessee 37401

Gentlemen:

This refers to the inspection conducted by Messrs. W. B. Swan, F. U. Bower and S. Ebnetter of this office on January 29 - February 1 and February 7-8, 1974, of activities authorized by AEC Construction Permit Nos. CPPR-91 and CPPR-92 for the Watts Bar 1 and 2 facilities, and to the discussion of our findings held by Mr. Swan with Mr. J. C. Killian at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no violations were disclosed.

We have examined actions you have taken with regard to previously reported unresolved items. These are identified in Section IV of the summary of the enclosed report.


In accordance with Section 2.790 of the AEC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the AEC's Public Document Room. If this report contains any information that you believe to be proprietary, it is necessary that you submit a written application to this office requesting that such information be withheld from public disclosure. If no proprietary information is identified, a written statement to that effect should be submitted. If an application is submitted, it must fully identify the bases for which information is claimed to be proprietary. The application should be prepared so that information sought to be withheld is incorporated in a separate paper and referenced in the application since the application will be placed

FEB 22 1974

in the Public Document Room. Your application, or written statement should be submitted to us within 20 days. If we are not contacted as specified, the enclosed report and this letter may then be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Very truly yours,

  
Norman C. Moseley  
Director

Enclosure:

RO Inspection Report Nos.  
50-390/74-1 and  
50-391/74-1

Letter to Tennessee Valley Authority from N. C. Moseley  
dated FEB 22 1974 50-390/74-1 and 50-391/74-1

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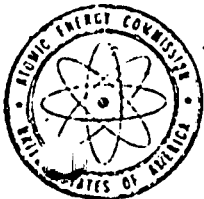
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REGION II - SUITE 818  
230 PEACHTREE STREET, NORTHWEST  
ATLANTA, GEORGIA 30303

TELEPHONE: (404) 526-4503

RO Inspection Report Nos. 50-390/74-1 and 50-391/74-1

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

Facility Name: Watts Bar Nuclear Plant Units 1 and 2  
Docket Nos.: 50-390 and 50-391  
License Nos.: CPPR-91 and CPPR-92  
Category: A2/A2

Location: Spring City, Tennessee

Type of License: W PWR, 1160 Mwe

Type of Inspection: Routine, Unannounced

Dates of Inspection: January 20 - February 1, 1974  
February 7-8, 1974

Dates of Previous Inspection: December 12-14, 1974

Inspectors-In-Charge: W. B. Swan, Reactor Inspector (January 29-February 1, 1974)  
Engineering Section  
Facilities Construction Branch

F. U. Bower, Reactor Inspector (February 7-8, 1974)  
Engineering Section  
Facilities Construction Branch

Accompanying Inspector: S. D. Ebnetter, Reactor Inspector (February 7-8, 1974)  
Engineering Section  
Facilities Construction Branch

Other Accompanying Personnel: None

Principal Inspector: L. E. Foster  
L. E. Foster, Reactor Inspector  
Facilities Section  
Facilities Construction Branch

2/21/74  
Date

Reviewed by: Walrusman  
W. A. Crossman, Senior Inspector  
Facilities Section  
Facilities Construction Branch

2/21/74  
Date

SUMMARY OF FINDINGS

I. Enforcement Action

A. Violations

None

B. Safety Items

None

II. Licensee Action on Previously Identified Enforcement Matters

A. Violations

The following violation resulted from a vendor inspection at Rotterdam Dockyard Company, Rotterdam, The Netherlands.

73-1-A1 (999-39)      Control and Audit of Purchased Equipment

Licensee letter dated February 14, 1974, states that a comprehensive audit of the TVA, Westinghouse and Rotterdam Dockyard QA Programs for design, procurement manufacture and quality assurance has been performed; the W contract provides that RDM identify the hold points and notify W. At the same time RDM notifies TVA that these points are available for inspection; and that the QA program for the TVA representative at RDM plant will be reviewed and revised to ensure compliance. This item will remain open until RO examines the final revised QA program.

B. Safety Items

None

III. New Unresolved Items

None

IV. Status of Previously Reported Unresolved Items

73-3/1      Schedule for Site Audits

The Watts Bar audits scheduled for January, February and March were reviewed and are commensurate with the work progress.

Tentative schedules for reviewing civil procedures and activities have been prepared and are being reviewed for approval. This item is closed. (Details I, paragraph 2)

The following unresolved item resulted from a vendor inspection at Rotterdam Dockyard Company, Rotterdam, the Netherlands.

73-2/1 (999-39) Design Review and Documentation

Documentary evidence was not available to determine if the reactor vessels are in conformance with the requirements of the ASME Code, Section III, 1973 Edition and including the Addenda through Winter of 1971. This item remains open.

V. Design Changes

None

VI. Unusual Occurrences

Heavy rainfall during the past month resulted in substantial delay in earth moving and concrete work.

VII. Other Significant Findings

A. Project Status

Overall construction is 6% complete. Approximately 36,000 cubic yards of concrete for all classes has been placed. A three foot thick blanket of protective concrete is being placed over the shale foundations at the base of the containment building. Placement is 60% complete.

B. Personnel

Approximately 1,300 TVA personnel are presently on site. Four additional graduate civil engineers have been added to the site engineering group.

C. Training Program

A management training program has been developed and training sessions are in progress.

VIII. Management Interview

The results of the inspection were discussed with J. C. Killian, Project Manager, members of his staff and QA representatives of OEDC and DED Knoxville at the conclusion of the inspection.

DETAILS I

Prepared by:

W. B. Swan 2/15/74  
W. B. Swan, Reactor Inspector, Engineering Date  
Section, Facilities Construction Branch

Dates of Inspection: January 29 - February 1, 1974

Reviewed by:

J. C. Bryant 2/15/74  
J. C. Bryant, Senior Inspector, Engineering Date  
Section, Facilities Construction Branch

All information in Details I applies equally to Units 1 and 2 except where information is identified with a specific reactor.

1. Individuals Contacted

Tennessee Valley Authority (TVA)

Site Personnel

J. C. Killian - Project Manager  
T. B. Northern - Construction Engineer  
L. C. Northard - Unit Supervisor, Quality Control and Records  
Engineering Unit  
H. S. Sheppard - Unit Supervisor, Civil (F) Field Engineering Unit  
J. C. Cofield - Unit Supervisor, Materials Engineering (C&S) Unit  
J. A. Lawhorn - Construction Inspector, Materials Engineering (C&S)  
Unit  
R. L. Honeycutt - Civil Engineer, Civil (F) Field Engineering Unit  
(Reinforcing Steel)  
K. A. Hasting - Mechanical Engineering Associate, Mechanical  
Engineering Unit  
C. E. Thompson - Civil Engineer, QC & Records Engineering Unit  
J. C. Roberts - Engineer Associate, QC & Records Engineering Unit

Knoxville: Division of Engineering Design and Construction (OEDC)

A. L. Mazzetti - Engineer, DED Quality Assurance Staff  
R. W. Dibeler - Supervisor of Quality Audits, OEDC-QA Staff  
A. F. Pagano - Engineer, OEDC-QA Staff

2. Schedule for Site Audits 73-3/1

The inspector was given a copy of DEC-QCP-1.5, Attachment C, W.B.N.P  
Audit Schedule; Third Quarter - FY-74



<u>PROCEDURE/ACTIVITY</u>	<u>DATE</u>
DEC-QCP-4.1 - Procurement, Storage, Issue and Control of Welding Material	2/6/74
DEC-QCP-2.3 - Fabrication and Inspection of Miscellaneous Steel	2/13/74
DEC-QCP-3.2 - Inspection of Embedded Conduit and Grounding	2/20/74
DEC-QCP-1.6 - Receipt, Inspection, Storage and Withdrawal of Permanent Material	2/27/74
DEC-QCP-2.2 - Concrete Placement and Documentation	3/6/74
DEC-QCP-4.2 - Welder and Welding Operator Qualification	3/13/74
DEC-QCP-3.1 - Handling, Storage, and Maintenance of Permanent Electrical Materials	3/20/74
DEC-QCP-1.1 - Print Room Procedure	3/27/74

In addition, the licensee had in process of approval review a listing entitled, Audit Interval of Civil Procedures and Activities. This lists five procedures and sixteen functions. Another scheduling list was obtained, entitled, Audit Interval of Electrical Procedures and Activities which suggests auditing intervals for ten electrical procedures and eight activities.

On January 31, 1974, a conference was held on site between Knoxville quality auditing representatives and the site supervisor of the quality control and records unit concerning scheduling, scope and procedural format for audits.

The inspector was given the outline for auditing concrete manufacturing activities and facilities. The inspector was told that the area of responsibility for audits by the QC and records unit is restricted to the NSSS, related safety systems and Class I structures.

At the management interview the inspector stated that his findings indicated planning, scheduling and implementation of auditing commensurate with the project progress and the unresolved item is considered to be closed.

### 3. Procedure Development

The status of project procedure development was requested. The inspector was shown approved procedures and those under development and approval review. He was provided a table of contents of the Division of Construction Quality Control Procedures which had been approved on January 11, 1974. Eight general, five civil, one electrical and five mechanical QC procedures are listed as approved.

He was shown a draft of OEDC procedures QAS-QAP-3.1 Rev. 0 dated January 11, 1974, and entitled Quality Audits and QAS-QAP 3.2 Rev. 0 dated January 11, 1974, entitled "AEC-DRO Inspections." He was told that the subject matter of these procedures had been outlined for Regulatory review in the Bellefonte N.P. PSAR.

Procedure Qualifications: The inspector was told that, previously, most of the NDE procedures had been qualified at the Singleton Laboratories in Knoxville. Now, welding procedures are qualification tested at two sites, Browns Ferry and Sequoyah.

### 4. Receiving Inspection Scope

Procedure DEC-QCP-1.6 RO "Receipt, Inspection, Storage, and Withdrawal of Permanent Material" was discussed. Materials and equipment purchased by the site are given thorough shop and receipt inspections. Materials and equipment procured by TVA Purchasing and by the NSSS are inspected at the vendor's shops by DED-Inspection and Test. Technical acceptance and vendor supporting documentation approval and accumulation is performed by DED-Design.

Site receiving personnel do not have, in most cases, copies of the procurement, supporting and approval documents beyond shop release check lists. Nor do they have the responsibility or authority for determining the adequacy or acceptability of received items (many of which are received and stored in their shipping-packages) beyond checking for possible shipping damage if packaging shows shipping or handling damage.

TVA Purchasing requires that the manifest accompanying a shipped item is to have an engineering discipline designation: Civil, electrical, mechanical or architectural. Upon receipt of an item, the designated site engineering section is notified and assists in the inspection review, unloading, transport and storage of the item.

No deficiency was found in the procedures sampled during this inspection and the inspector found that procedures development required for site use was commensurate with the construction schedule.

5. Document Control

During construction, primary site document control is implemented through general QC procedure DEC-QCP-1.1 RO - "Print Room Procedures." Designations for length of retention are DOC, duration of construction, and LOP, life of plant.

Document control procedures were sampled during this inspection by a review of site drawing control, with the supervisor of the QC and Records Unit and the engineer associate in charge of the print room.

During replacement of obsolete drawings, a print shop representative pulls off the title block corner of each full size field print, leaving the basic print for transfer of as built information to the new print. Half size prints held by the crafts are picked up and destroyed.

Site generated shop drawings, with as built notations, do not get into print room control. The system engineers record data from the sketches on half size record prints of each system. The drawing control procedure appeared to be effective.

At the management interview, the inspector stated that the document control function appeared to be adequate at the present level of construction activity; but that the time consuming details of the control procedure would overwhelm present manning when activity increases substantially. The licensee agreed that additional personnel will be provided in a timely manner.

6. Status of Training Program

A second review was made of implementation of the site training program.

The overall training program is coordinated by the training coordinator of OEDC - Opportunities, Educational, and Development Group, at Knoxville. The group has thirty people, and provides or arranges for lectures on QA to the construction crafts. QC lectures are given by site personnel.

The site QC training program outline was awaiting approval by the OEDE-OED Group. The training and testing of NDE technicians was described for the inspector.

A walk through inspection was made of the training trailers and welder testing shop. Portable television equipment has been acquired. Radiography equipment and a radiograph reader had not been ordered, even though one is needed for training as well as for radiography of production welds and weld qualification specimens since the contract radiography company is not expected on site for about two years.

The licensee representative stated that the functions of the OEDC training coordinator and his staff have been stated in the Bellefonte nuclear plant PSAR. This has not been reviewed by the inspector. At the management interview, the inspector stated that the training facilities so far provided indicate good planning, the outline and scope of training courses underway and proposed appear reasonable but since these training plans have not been approved by the Knoxville training group, additional inspections will be made as approvals are obtained and the courses implemented. Training plans and implementation are considered adequate for work in progress; therefore, training is not an unresolved item but one under development.

#### 7. Class I Concrete

A follow on inspection was made of concrete manufacture, transport, inspection, placement and testing. Data and charts used in the previous monthly concrete quality control report were scanned. The QC report covers Class I concrete plus protective and cooling tower concrete and data on component materials.

The inspector noted a considerable variation of the running averages of three day specimen tests which had required frequent adjustment of cement used in the batches. The laboratory supervisor explained that the supplier of sand had not had sand screening equipment capable of consistency of product during the extremely rainy weather experienced since November 1973. The supplier has replaced his screening equipment with a water wash type and is now able to produce a sand of uniform size and cement adjustments due to sand inconsistency should now be unnecessary.

The inspector watched placement of mass Class I concrete at the northerly base of the auxiliary building in which a 3,000 psi mix with 1 1/2" maximum rock size was used. The specification requires that each 175 cy be sampled. It does not stipulate that sampling be done at the start of a placement although this is a prudent control practice. At 10:15 a.m., about fifteen percent of the estimated 435 cy had been placed. Three types of concrete were being produced at the time, that for protective concrete, the cooling tower and the auxiliary building. Testing had been done on the first two types of mixes. The inspector asked why the Class I concrete had not been sampled. A check showed that it was an oversight. A sample was taken immediately. The licensee agreed that it is prudent to sample the concrete for a large placement early, and stated that this is their usual practice.

No violations were found in concrete quality control.

8. Reinforcement Steel Bending

An inspection was made of the reinforcement steel storage yard and the bending facilities and operations. No deficiencies were noted.

9. Construction and Operations

The construction engineer was asked if site management had been receiving and acting on Construction Experience and Operations Experience Reports issued by Regulatory for power reactors. He stated that none had been received and that he had heard, verbally, about only one of those mentioned by the inspector.

Copies of the following were made available to him:

Unnumbered ROE - Valve Malfunctions in Nuclear Power Plants

ROB 74-1 - Valve Deficiencies

ROB 73-3 - Defective Hydraulic Shock Absorbers

ROB 73-2 - Containment Purge Valves

RCE 73-2 - Failure of High-Voltage Termination Units

ROB 73-1 - Failure of Faulty Overcurrent Trip Relay

RCE 73-1 - Failure of Valve Disc Retainers

RCE 72-4 - Safety Valve Header Failure at a PWR

RCE 72-3 - Limitorque Valve Operators

RCE 72-2 - Thin Wall Valves

RCE 72-1 - Fire at a Nuclear Plant Under Construction

RCE 71-6 - Cladding Separation in Steam Generator

DRO-II - Memorandum 12/9/71 - Barton D/P Cells

RCE 71-2 - Improper Reinforcing in Concrete Structure

RCE 71-1 - Pipe Break in Steam Safety Valve Nozzle Attachment

Site management took the position that these items (except for receipt and installation inspection) are the responsibility of the Purchasing, Design, and Inspection and Test Groups at Knoxville, and that site personnel do not have an information channel to these groups on these subjects at this time and cannot take effective action. Receipt of the hardware involved is not expected for one to two years. Design, selection, and procurement order placement remain to be done on some.

For these reasons, site management asked that DRO contact the Knoxville groups directly on these bulletins.

10. Licensee Request for Guidance on Qualification Requirements for Personnel Testing and Qualifying NDT Technicians and Engineers Used for NDT

The inspector was asked if Regulatory has issued position papers on the required capabilities of licensee or NDT laboratory personnel charged with the responsibility for qualifying NDT personnel, beyond the general statements of codes or standards. The inspector stated that he did not have with him any such position papers except for recently issued Regulatory Guide 1.71 - Welder Qualification for Areas of Limited Accessibility.

He stated that a request for information concerning any applicable position statements by Regulatory groups would be made through the principal inspector.

11. License Request for Site Copies of Experience Reports on Power Reactors

The licensee requested that a copy of each future ROB and RCE be mailed directly to the Construction Engineer, T. B. Northern, TVA-Watts Bar.

RO Inspection Report Nos. 50-390/74-1 and  
50-391/74-1

DETAILS II

Prepared by: S. Ebnetter 2/13/74  
S. Ebnetter, Reactor Inspector  
Engineering Section  
Facilities Construction Branch  
Date

Dates of Inspection: February 7-8, 1974

Reviewed by: J. C. Bryant 2/13/74  
J. C. Bryant, Senior Inspector  
Engineering Section  
Facilities Construction Branch  
Date

1. Persons Contacted

a. Tennessee Valley Authority (TVA)

J. C. Killian - Project Manager  
J. Shields - Principal Electrical Engineer  
J. Perdue - Electrical Engineer (Supervisor)  
T. Hayes - Electrical Engineer

2. Organization and Staff

The organization structure for quality control is essentially the same as for other TVA nuclear projects. Staffing of the positions is in progress with the only major position that is vacant in the electrical/instrumentation area being the Instrumentation Engineer (Supervisor).

3. Quality Control Procedures

The preparation of quality control procedures is in process with several procedures now in draft form. An effort is being made by the electrical unit to establish an automated procedure for Watts Bar to control electrical equipment and to define status throughout the construction phase.

The inspectors discussed the criteria of 10 CFR 50, Appendix B, with the licensee with regard to the electrical/instrumentation area.



RO Inspection Report Nos. 50-390/74-1  
and 50-391/74-1

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TENNESSEE VALLEY AUTHORITY  
Watts Bar 1 and 2

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