



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA ST., N.W., SUITE 3100
 ATLANTA, GEORGIA 30303

Report Nos: 50-438/83-10 and 50-439/83-10

Licensee: Tennessee Valley Authority
 500A Chestnut Street
 Chattanooga, TN 37401

Docket Nos: 50-438 and 50-439

License Nos: CPPR-122 and CPPR-123

Facility Name: Bellefonte

Inspection at Bellefonte site near Scottsboro, Alabama

Inspector: W. M. Miller, Jr. 5-12-83
 Date Signed

Approved by: T. E. Conlon 5-13-83
 Date Signed
 T. E. Conlon, Section Chief
 Engineering Programs Branch
 Division of Engineering and Operational Programs

SUMMARY

Inspection on April 19 - 22, 1983

Areas Inspected

This routine, unannounced inspection involved 29 inspector-hours on site in the area of fire protection.

Results

Of the areas inspected, no violations were identified. Three apparent deviations were found (Portions of the fire protection systems do not conform to the design criteria of the applicable NFPA Code-paragraphs 6.a and 6.b; exterior fire protection water system was not installed under a QA/QC program - paragraph 6.c; and, improper fire damper installation - paragraph 6.e).

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 PDR ADOCK 05000438
 Q PDR

REPORT DETAILS

1. Persons Contacted

Licensee Employees

L. Cox, Project Manager
*B. J. Thomas, Quality Manager
*D. Smith, ACE
*D. Thornton, MEU-D Supervisor
T. McCullum, MEU-C Supervisor
*J. T. Barnes, OQA-CQAB
*G. R. Green, CQAB
*J. Woodward, MEU-D (Fire Dampers)
*R. V. Sulton, MEU-D (Fire Dampers)
A. Cook, MEU-C (Protection Systems)
B. Terry, MEU-C (Fire Pumps)
A. Sargent, MEU-C (Sprinklers)
*H. Johnson, EEU-B Supervisor
R. L. Lewis, EEU-B (Fire Detection)
*B. Ives, NLU
M. Morrison, Reactor Engineering Supervisor
W. Hall, Power-Electrical Maintenance

NRC Resident Inspector

*J. D. Wilcox

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 22, 1983, with those persons indicated in paragraph 1 above. The licensee acknowledged the following inspection findings:

- a. Deviation (438/83-10-01 and 439/83-10-01), Portions of the fire protection systems do not conform to the design criteria of the applicable NFPA Code - paragraphs 6.a and 6.b.
- b. Inspector Followup Item (438/83-10-02 and 439/83-10-02), Reevaluation of fuel storage and supply to diesel driven fire pumps - paragraph 6.a.
- c. Deviation (438/83-10-03 and 439/83-10-03), Exterior fire protection water system was not installed under a QA/QC program - paragraph 6.c.
- d. Inspector Followup Item (438/83-10-04 and 439/83-10-04), Reevaluation of hydrostatic tests of the fire protection piping systems - paragraph 6.d.

- e. Deviation (438/83-10-05 and 439/83-10-05), Improper fire damper installation - paragraph 6.e.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Fuel Storage Area Fire Protection

A tour was made of the fuel storage area by the inspector to verify compliance with the requirements of SNM License No. 1883. The general housekeeping within the area was found to be satisfactory and the fire fighting equipment (fire hose station and wheeled extinguisher) required by licensee's application of January 23, 1981, was available for use. TVA apparently did not commit to provide, nor did the NRC require, any of the permanent plant fire protection features for this area to be operational prior to the receipt of fuel. The permanent plant fire protection equipment for this area was not operational.

Within the areas examined no violations or deviations were identified.

6. Permanent Plant Fire Protection Features

The following fire protection features were reviewed by the inspector:

a. Fire Pumps

The plant fire protection water system is supplied by four diesel driven pumps rated at 2500 gpm at 147 psi each. The installation of these pumps appeared to meet the provision of NFPA 20, Centrifugal Fire Pumps as stated in FSAR Section 9.5.1.1, except as follows:

- (1) The fire pump starting circuits were not of the normally closed type, also they were arranged such that breakage, disconnecting, shorting of wires, or loss of power to the circuit would cause continuous running of the fire pump as required by NFPA-20 Sections 9-5.2.2 and 9-5.2.5.
- (2) The fire pump relief valves were not provided with a means of detecting flow of water through the relief valves as required by NFPA-20 Section 2-12.6.

These are examples of failure to meet the NFPA codes and standards in the design of the fire protection system as committed by FSAR Section 9.5.1.1 and is identified as an example of Deviation Item (438/83-10-01 and 439/83-10-01). Portions of the fire protection systems do not conform to the design criteria of the applicable NFPA code.

In addition, the fuel storage tanks, vent pipes, and fuel pumps for the fire pump diesel engines did not appear to meet the applicable NFPA criteria. The fuel tanks were below grade which does not meet NFPA-20 Section 8-4-5. A check valve was installed in the vent pipe from each tank which is not permitted by NFPA-30, Flammable and Combustible Liquids Code, Sections 2-2.4 and 2-3.4. The fuel pump for the diesel engine has been changed from a mechanical to an electric type pump. These items will be further evaluated during a subsequent NRC inspection and are identified as Inspection Followup Item (438/83-10-02 and 439/83-10-02), reevaluation of fuel storage and supply to diesel driven fire pumps.

b. Automatic Sprinkler Systems

The licensee had not completed QC installation inspections on any of the automatic sprinkler systems. However, the following deviations from the design provisions of NFPA-13, Sprinkler System, were noted for the systems in the diesel generator and fire pump buildings:

- (1) The electrical circuit from the fire detection control panels to the sprinkler system which activate the pre-action control valves were not supervised as required by NFPA-13 Section 5-3.5.4.
- (2) The piping systems were not supervised as required by NFPA-13 Section 5-3.5.4.

These are identified as additional examples of Deviation Item (438/83-10-01 and 439/83-10-01) in which the design of the fire protection systems do not meet the criteria of the applicable NFPA Code as committed in the FSAR.

Also, the sprinkler heads in the diesel fire pump room are pendent type installed in the upright position. This had been identified by the licensee and the correct type heads are to be installed. This will be verified during a subsequent NRC inspection.

c. Fire Protection Underground Piping

A review was made of the following pipe specification purchase data and receipt information to verify that the piping installed conformed to that specified:

<u>MARK NO.</u>	<u>SIZE</u>	<u>TYPE PIPE</u>
410	14"	steel - coated
414	10"	steel - coated
416	8"	steel - coated
430	16"	cast iron - lined
432	16"	cast iron - lined
434	12"	cast iron - lined

Records were not available to indicate that the exterior piping system was installed under a quality assurance and quality control program as committed by FSAR Appendix 9.5A Section C. This is identified as Deviation Item (438/83-10-03 and 439/83-10-03), exterior fire protection system was not installed under a QA/QC program.

This discrepancy was identified during a TVA QA audit in October 1980, but the licensee had not yet resolved this audit finding.

d. Hydrostatic Test Data for Fire Protection Systems

The following test data was reviewed:

<u>TEST NO.</u>	<u>LOCATION</u>	<u>DATE OF TEST</u>
RF-H-001	Computer Room	9-30-81
RF-H-011	Yard System (Portions)	2-23-82
ORF-H-017	RSW at Intake	7-25-82
ORF-H-026	Aux Bldg. Yard System	12-10-82
OFH-H-026	Yard System at Security Bldg.	10-15-82

These tests were conducted at 215 psi for two hours. Recently, TVA design has changed the hydrostatic test requirements. Pipe installed at elevation 633' is to be tested at 215 psi, pipe located between elevations 610' and 633' is to be tested at 225 psi and pipe located between elevations 590' and 610' is to be tested at 235 psi. The site mechanical engineering group (Unit C) is to review all hydrostatic test data and identify all piping that was not tested in accordance with the new procedures. This area will be reviewed during a subsequent NRC inspection and is identified as Inspector Followup Items (438/83-10-04 and 439/83-10-04), reevaluation of hydrostatic tests of the fire protection piping system.

e. Fire Dampers

The inspection data on the following fire dampers was reviewed and found satisfactory:

<u>FIRE DAMPER NO.</u>	<u>MARK NO.</u>	<u>DATE OF QC INSPECTION</u>
IVA-MDMP-482-B	284	8-26-82
IVA-MDMP-483-B	282	8-26-82
IVA-MDMP-484-B	277	8-26-82
IVA-MDMP-485-B	280	8-26-82
OVC-MDMP-696	859	8-26-82
IVG-MDMP-079-A	714	4-22-82
IVG-MDMP-115-A	742	3-02-82
IVG-MDMP-157-N	745	3-02-82
IVG-MDMD-161-N	745	3-02-82
IVG-MDMD-751-A	752	8-26-82

The qualification records for two of the mechanical inspectors who conducted the above inspections were reviewed. Records indicated that these two inspectors were qualified to conduct the inspections. However, five of the above dampers were inspected and none were found installed in accordance with the manufacturer's requirements as required by TVA drawing No. 3AW0910-00-01. The damper manufacturer requires the dampers to be attached to the duct sleeve by welds, bolts, screws or rivets spaced not more than 8-inches on center all around both sides of the damper assembly. The dampers were installed by welds spaced 12 inches apart. This failure to meet the installation design requirements is identified as Deviation Item (438/83-10-05 and 439/83-10-05), improper fire damper installation.

f. Fire Detection System

A review and inspection was made of the fire detection system for the train B switchgear room (Fire zone 9) in the auxiliary building at the 649' elevation. The following inspector data was reviewed and found satisfactory:

<u>CABLE NO.</u>	<u>DATE OF QC CABLE INSPECTION</u>	<u>DATE OF QC TERMINATION INSPECTION</u>
1RF-ECA-6213	9-30-80	9-18-82
1RF-ECA-6216	6-16-80	9-18-82
1RF-ECA-6219	7-17-81	9-18-82
1RF-ECA-6220	9-26-81	9-18-82
1RF-ECA-6221	7-17-81	9-18-82
1RF-ECA-6226	9-19-80	9-18-82

<u>CONDUIT NO.</u>	<u>DATE OF QC INSPECTION</u>
1A2-5507	7-29-80
1A2-5510	4-30-80
1A2-5513	7-30-80
1A2-5516	9-01-81
1A2-5519	8-18-81
1A2-5520	9-01-81
1A2-5521	5-02-80
1A2-5525	7-30-80
1A2-5531	7-29-80

The qualifications records were reviewed for five electrical inspectors who had performed the above inspections. These personnel had been approved to accomplish the above inspections.

Fire detector units IRF-1X5A-32A and 32J were inspected. The cable installation and termination to the units conformed to TVA Drawing Nos. 5AW0819-RV-1 and 5GB0680-JL-06, except the fire detector units had not yet been installed. The detectors are to be installed prior to system activation at which time the system functional tests will be conducted. This test data will be reviewed during a subsequent NRC inspection. In general, it appeared that the fire detection systems were being installed under an acceptable QA/QC program.

7. IE Circulars

(Closed) Circular No. 79-13, Replacement of Diesel Fire Pump Starting Contactors: This circular is not applicable to the four diesel driven fire pumps at Bellefonte. The installed engines are equipped with the recommended new magnetic switch. However, in November 1982, the licensee identified a potential problem involving the failure of the fire pump to start when activated. Subsequent investigation indicated that the problem was attributed to a dirty contact surface in the starter contactor. The licensee has instituted a periodic inspection and maintenance program for these contactors which should assure proper future operation.