

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

December 9, 1983

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - NRC-OIE REGION II INSPECTION
REPORT 50-390/82-29, 50-391/82-26 - REVISED RESPONSE TO DEVIATIONS -
50-390/82-29-03 AND 50-391/82-26-03

The subject inspection report dated August 27, 1982 cited TVA with two deviations. Our responses to the subject report were submitted on October 8, and December 3, 1982 and July 25, 1983. A supplemental response was submitted on October 19, 1983.

In response to the November 28, 1983 teleconference between TVA and the NRC, we are enclosing our revised response to the subject deviation (Enclosure 1). Also enclosed (Enclosures 2 and 3) is other information requested by the NRC in our teleconference.

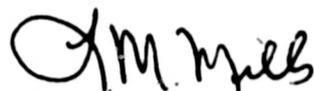
As discussed with inspectors Bill Miller and Tom Conlin during the teleconference on November 28, 1983, the review and verification of Quality Assurance records would not be completed by December 1, 1983. The new date for completion of this item is February 29, 1984.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

To the best of my knowledge, I declare the statements contained herein to be complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager
Nuclear Licensing

Enclosures

cc (Enclosures):

Mr. Richard C. DeYoung, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
STATUS OF CORRECTIVE ACTIONS
FOR DEVIATIONS 50-390/82-29-03 AND 50-391/82-26-03

Corrective Actions for Specific Finding

1. Any applicable portions of the fire protection exterior piping system not having documentation on record will be hydrostatically tested and documented.

The need for additional hydrostatic testing cannot be determined until TVA's Division of Construction (CONST) completes the review and verification of quality assurance records by February 29, 1984. See item 3 below under "Corrective Actions That Have Been or Will Be Taken." As stated in item 3 the lack of appropriate hydrostatic test documentation will be nonconformed and dispositioned appropriately.

2. Flow tests will also be run on exterior piping loops and main feeds to safety-related buildings. These tests will be conducted and documented as part of the plant's preoperational test TVA series 25.

Preoperational test TVA 25C is currently scheduled for completion by February 3, 1984.

Corrective Actions That Have Been or Will Be Taken

1. TVA's Division of Engineering Design (EN DES) will issue an engineering procedure applying to all nuclear projects that will clearly state what organizations are responsible for defining fire protection quality assurance boundaries on design drawings and will state the general criteria for establishing these boundaries.

EN DES-EP 1.55 was issued August 4, 1983.

2. EN DES will then review all Watts Bar drawings that fall under the fire protection quality assurance program for conformance to the engineering procedure. All deficiencies will be corrected through the drawing revisions.

Review completed and revised drawings issued October 27, 1983.

3. TVA's Division of Construction (CONST) will review all Watts Bar drawings falling under the Fire Protection Quality Assurance Program and will verify that adequate quality assurance records exist in compliance with TVA General Construction Specification G-73, "Inspection, Testing and Documentation Requirements for Fire Protection Systems and Features." All nonconforming items will be documented and appropriately dispositioned.

ENCLOSURE 2
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
WBN-QCI-1.39, R4, DRAFT
FIRE PROTECTION QUALITY ASSURANCE PROGRAM

This draft instruction has been revised to provide specific documentation requirements and clarification requested by inspectors Miller and Conlin during the November 28, 1983, teleconference call as follows:

1. Paragraph 8.5 - Deleted Attachment E.
2. Paragraph 8.8 - Added Attachment H, Verification of Insulation Test of Fire Protection Electrical Equipment.
3. Paragraph 8.9 - Added Attachment I, Verification of Torque and Limit Switch Tests on Fire Protection Electrical Equipment.
4. Paragraph 8.10 - Added Attachment J, verification of Electrical Control Functional Test on Fire Protection Electrical Equipment.
5. Paragraph 8.11 - Added Attachment K, Verification of Motor Rotational Tests on Fire Protection Electrical Equipment.
6. Attachment A, page 6 of 12 - Added requirements of QCP-3.05 and reference to note 10 for cable termination/insulation, requirements of QCI-1.25 for conduit, and reference to note 9 for Equipment, Overload Protection, Internal Wiring, and Splicing.
7. Attachment A, page 8 of 12 - Deleted General requirements for Limited QA and Non-QA on Electrical Penetrations.
8. Attachment A, page 11 of 12 - Revised note 10 to add documentation requirements per attachments H, I, J, and K.
9. Attachment B - Added verification signature by independent responsible engineering unit (REU) representative.
10. Attachment C - Added verification signature by independent responsible engineering unit (REU) representative.
11. Attachment D - Added verification signature by independent responsible engineering unit (REU) representative.

Although not specifically indicated in the WBNP-QCI-1.39 R4, draft, all work performed after April 18, 1977, shall be in accordance with the procedure and all fire protection systems and features installed before April 18, 1977, will be evaluated by TVA for acceptability.

1.0 PURPOSE

1.1 This instruction describes the quality assurance program for fire protection systems and features.

2.0 SCOPE

2.1 This procedure is applicable to the following fire protection systems and features that fall within the fire protection QA boundaries as defined on EN DES drawings or the Drawing Information System (DIS). (See section 6.0 for a detailed explanation of the method for defining fire protection boundaries).

2.1.1 Mechanical fire suppression systems (including carbon dioxide and halon).

2.1.2 Fire detection systems including detectors, panels, central processing units, alarm stations, actuation circuits, and related wiring.

2.1.3 Mechanical and electrical fire barrier penetration seals and fire stops.

2.1.4 Heating, ventilating, and air-conditioning system fire and smoke dampers, fire and smoke damper controls, and duct fireproofing.

2.1.5 Fire doors, frames, hardware, and related control circuits.

2.1.6 Emergency lighting system (eight-hour battery packs).

2.1.7 Emergency communication systems (related portable radios and fixed repeater systems).

2.1.8 Fire barriers and fire retardent cable coatings (including structural steel fireproofing). (G-73)

2.2 All systems and features within the scope of this procedure shall be identified in the appropriate accountability programs.

3.0 REFERENCES

3.1 Project Construction Specification N3C-881, "Identification of Structures, Systems, and Components covered by the Watts Bar Nuclear Plant Quality Assurance Program"

3.2 General Construction Specification G-73, "Inspection, Testing and Documentation Requirements for Fire Protection Systems and Features"

3.3 EN DES-EP 1.55, "Fire Protection Limited Quality Assurance Program"

4.0 DEFINITIONS

4.1 As-Constructed Drawing Sign-Off--The signature of the responsible engineer on the as-constructed drawing attests that the items represented by the drawing are as depicted and in conformance to all criteria of the drawing including dimensions and referenced notes, codes, and standards (QAP-6.1).

4.2 Category I Structure--a list of category I structures is contained in N3G-881 (reference 3.1).

5.0 RESPONSIBILITIES

5.1 The Responsible Engineering Unit (REU) determines the requirements for each specific item and identifies the item and the required inspections and tests in the appropriate accountability program.

5.1.1 Where specified by this procedure, the REU verifies and documents the required inspections and tests. When this is the case, the inspection or test must be conducted by an individual other than those directly responsible for the installation.

5.2 The Craft

5.2.1 Installs fire protection equipment, materials, cables, and features in accordance with applicable TVA drawings, codes, specifications, standards, and those portions of the Quality Control Instructions (QCIs) that detail installation requirements.

5.2.2 Reports installation in accordance with site procedures.

6.0 PROCEDURE

6.1 Features Covered By The WBNP Full Quality Assurance Program

The WBNP full quality assurance program covers the following:

6.1.1 Seismic mountings

6.1.2 Seismic supports

6.1.3 Systems and features designated:

- (a) Seismic category I,
- (b) Seismic category I (L),
- (c) Class IE, or
- (d) Trained

6.1.4 Mechanical Features

6.1.4.1 Fire pumps and fire pump discharge strainers in category I structures.

6.1.4.2 Water and foam suppression systems and hose racks located in category I structures.

6.1.4.3. Water suppression systems in category I structures protecting penetrations in the walls between the turbine building and control, reactor, or auxiliary buildings.

6.1.4.4. Piping, valves, and fittings in category I structures connecting the fire pumps with the fire suppression systems and hose racks covered by items 6.1.4.2 and 6.1.4.3.

6.1.4.5. Carbon dioxide storage tanks in category I structures supplying fire suppression systems and associated refrigeration units.

6.1.4.6. Carbon dioxide and halon suppression systems located in category I structures.

6.1.4.7. Piping, valves, and fittings inside category I structures connecting the carbon dioxide storage tanks and the halon storage cylinders to the fire suppression systems covered by item 6.1.4.6.

6.1.5 Architectural Features

6.1.5.1 Fire-rated barriers using plaster and metal lath, gypsum wallboard, or masonry block that are located in category I structures and are defined in plant specific compartmentation drawings.

6.1.5.2 Fire doors, frames, hardware, and release devices located in category I structures in fire barriers defined by plant specific compartmentation drawings.

6.1.6 Civil Features

6.1.6.1 Fireproofing for structural steel in category I structures.

6.1.6.2 Fire-rated barriers using concrete in category I structures and defined in plant specific compartmentation drawings.

EXCEPTION

6.1.6.2.1 Non-load-bearing structural steel associated with a concrete fire barrier may be excluded from the program.

6.1.7 Electrical Features

6.1.7.1 Electrical penetration seals located in Category I structures in fire barriers defined by plant specific compartmentation drawings.

6.1.7.2 Fire barrier wraps or enclosures around conduits or cable trays located in Category I structures.

6.1.7.3 Fire retardant cable coatings used in Category I structures.

6.2 Features Covered By The Fire Protection Limited Quality Assurance Program

The fire protection limited quality assurance program covers the following within the boundaries described in paragraph 6.3:

6.2.1 Mechanical Features

6.2.1.1 Halon storage cylinders.

6.2.1.2 Piping, valves, and fittings outside category I structures connecting fire pumps with the fire suppression systems inside category I structures.

6.2.1.3 Branch lines from the piping covered in item 6.2.1.2 are excluded from the program if:

6.2.1.3.1 The lines supply systems or equipment that are not covered by the program, and

6.2.1.3.2 The lines can be isolated by either a normally open or closed valve.

6.2.1.3.3 The limited quality assurance boundary is located at the downstream side of the normally open or closed valve.

6.2.2 Electrical Features

6.2.2.1 Fire detection system signal-initiating devices such as fire detectors, pressure switches, limit switches, and relays that are either located in Category I structures or are associated with fire suppression systems covered by the program.

- 6.2.2.2 Local detection panels, logic panels, and multiplexer units if they receive any input from an initiating device in item 6.2.2.1.
- 6.2.2.3 Local fire horns, bells, and lights located in Category I structures or associated with fire suppression systems covered by the program.
- 6.2.2.4 Solenoid pilot valves that actuate fire suppression systems covered by the program.
- 6.2.2.5 All wiring connecting the Devices in items 6.2.2.1 through 6.2.2.4.
- 6.2.2.6 Communication loops, demultiplexers, computers, printers, cathode ray tube monitors, annunciators and connecting wiring that provide main control room status for the fire detection system.
- 6.2.2.7 Control circuits for the mechanical and architectural features covered by the program.

EXCEPTIONS

- 6.2.2.7.1 Fire pump discharge strainers.
- 6.2.2.7.2 Remote manual controls for automatic fire suppression systems.
- 6.2.2.8 Emergency communication system radio repeaters and antenna networks for portable transmitter/receivers used in safety-related structures by the plant fire brigade.
- 6.2.2.9 Power supply circuits for items 6.2.2.1 through 6.2.2.8 from the fire protection first electrical distribution panel that is not dedicated to fire protection. The limited quality assurance boundary is located on the load side of the fuse or breaker.

EXCEPTION

- 6.2.2.9.1 External power supply circuits may be excluded from the program on fire protection equipment provided with 100 percent internal battery backup power. In this case the limited quality assurance boundary is located at the equipment's external power terminals.
- 6.2.2.10 Eight-hour, battery-powered emergency lighting units located in safety-related structures, in emergency equipment storage rooms, in assembly areas for plant emergencies, and in major access paths between these areas.

6.2.3 Miscellaneous Features

- 6.2.3.1 Portable fire protection equipment for use in Category I structures.

- 5.3.2.7 Mark the fire protection quality assurance boundaries by circling features with heavy dashed lines in the body of the drawing. Solid lines should never be used to define program boundaries, because of possible confusion with revision markings.
- 5.3.2.8 Place an asterisk or other symbol after the unique identification number for each feature covered by the fire protection limited quality assurance program. The meaning of the asterisk or other symbol must be defined on each affected drawing or in the general notes that are applicable to the entire drawing series. This method of marking program boundaries is appropriate for features such as fire doors and dampers, mechanical and electrical penetrations, and self-contained emergency lighting units.

5.3.3 Construction drawings showing features covered by the fire protection limited quality assurance program shall have a note similar to the following on each affected drawing or in the general notes that are applicable to the entire drawing series:

5.3.3.1 "All construction activities for features covered by the fire protection limited quality assurance program shall be conducted in accordance with TVA General Construction Specification No. G-73."

5.4 REQUIREMENTS

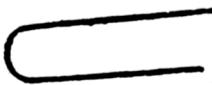
- 6.4.1 The specific procedures for implementing the program elements required by the full QA program and the limited QA program are listed in attachment A.
- 6.4.2 Some procedures are applied unilaterally to the entire CONST program for programmatic consistency and are identified by an entry in the "Non-QA" column of attachment A.
- 6.4.3 Notes on drawings take precedence and are implemented over and above the requirements of attachment A.
- 6.4.4 The procedure numbers listed in attachment A may not always remain current but the requirement to implement the program element remains and the current quality control procedures are used for implementation.

7.0 DOCUMENTATION

7.1 Documentation is in accordance with the referenced procedures as noted in attachment A.

8.0 ATTACHMENTS

8.1 Attachment A - Fire Protection Quality Assurance Program Requirements

- 8.2 Attachment B--Test Verification Sheet - Fire Protection Systems and Features - Fire Detection Systems
 - 8.3 Attachment C--Test Verification Sheet - Fire Protection Systems and Features - Emergency Lighting Systems (Eight-Hour Battery Packs)
 - 8.4 Attachment D--Test Verification Sheet - Fire Protection Systems and Features - Emergency Communication Systems (Portable Radios and Fixed Repeater Systems)
 - 8.5 Attachment E--Not Used
 - 8.6 Attachment F--Verification of Fire Protection Piping and Valve Installation
 - 8.7 Attachment G--Verification of Bolting/Threading Operations on Fire Protection Piping
 - 8.8 Attachment H--Verification of Insulation Test of Fire Protection Electrical Equipment
 - 8.9 Attachment I--Verification of Torque and Limit Switch Tests on Fire Protection Electrical Equipment
 - 8.10 Attachment J--Verification of Electrical Control Functional Test on Fire Protection Electrical Equipment
 - 8.11 Attachment K--Verification of Motor Rotational Test on Fire Protection Electrical Equipment
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10CFR50 APPENDIX B CRITERION AND PROGRAM ELEMENTS

FULL QA

LIMITED QA

NON-QA

Criterion I - Organization

Organization	QCI-1.37	QCI-1.37	QCI-1.37
Stop Work	QCI-1.32	QCI-1.32	N/A

Criterion II - Quality Assurance Program

Fire Protection Program	QCI-1.39	QCI-1.39	QCI-1.39
Indoctrination, Qualification, & Training Certification	QCI-1.11 Series QCI-2.13 QCI-2.14 QCI-4.02	QCI-1.11 Series QCI-2.13 QCI-2.14 QCI-4.02	QCI-1.11 Series N/A N/A QCI-4.02
Storage & Housekeeping	QCI-1.36 QCP-1.36	QCI-1.36 (1) QCP-1.36 (1)	QCI-1.36 (1) QCP-1.36 (1)
Conduit Support Program	QCI-3.09	QCI-3.09	Non Seismic
Seismically Qualified Instrumentation Supports and Lines	QCI-3.11 Series	QCI-3.11 Series	Non Seismic

Criterion III - Design Control

Engineering Change Notices	QCI-1.09	QCI-1.09	QCI-1.09
Field Change Requests	QCI-1.13	QCI-1.13	QCI-1.13
Seismic Support Variances	QCI-1.28	QCI-1.28	Non Seismic
Sense Line Flexibility	QCI-3.13-4 QCP-3.13-4	QCI-3.13-4 QCP-3.13-4	Non Seismic Non Seismic

10CFR50 APPENDIX B CRITERION AND PROGRAM ELEMENTS

FULL QA

LIMITED QA

NON-QA

Weld Procedure Assignment

QCI-4.03

QCI-4.03

QCI-4.03

Pipe Clearance Evaluation

QCI-4.10-01

Non Seismic

Non Seismic

Criterion IV - Procurement Document Control

Site Control of Procurement and Procurement Documents

QCI-1.20

QCI-1.20

N/A

QCI-1.20-3

QCI-1.20-3

N/A

Criterion V - Instructions, Procedures,
& Drawings

Preparation and Control of Instructions, Procedures,
and Tests

QCI-1.10 Series

QCI-1.10 Series

QCI-1.10 Series

Work Plans

QCI-1.30

QCI-1.30

QCI-1.30

Work Packages

QCI-1.56

QCI-1.56

QCI-1.56

Drawing Preparation

QCI-1.01

QCI-1.01

N/A

QCI-4.23-1

Non Seismic

Non Seismic

QCI-4.34

QCI-4.34

Non Seismic

QCI-4.54

Non Code

Non Code

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FULL QA

LIMITED QA

NON-QA

Criterion VI - Document Control

Drawing & Document Control

QCI-1.01	QCI-1.01	QCI-1.01
QCI-1.10	QCI-1.10	QCI-1.10
QCI-1.10-1	QCI-1.10-1	QCI-1.10-3
QCI-1.13	QCI-1.13	QCI-1.13
QCI-1.25	QCI-1.25	QCI-1.25
QCI-1.30	QCI-1.30	QCI-1.30
QCI-1.56	QCI-1.56	QCI-1.56
QCI-4.23-1	Non Seismic	Non Seismic
QCI-4.34	QCI-4.34	Non Seismic
QCI-4.54	Non Code	Non Code

Criterion VII - Control of Purchased Material, Equipment, and Services

Receiving Inspection

QCI-1.06	QCI-1.06	QCI-1.06
QCP-1.06	Not Required	N/A

Control of Test Equipment Procurement

QCI-1.12	Not Required	N/A
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Transfers

QCI-1.17	QCI-1.17	QCI-1.17
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Control of Procurement

QCI-1.20	QCI-1.20	N/A
QCI-1.20-3	QCI-1.20-3	N/A

Surveillance of Site Contractors

QCI-1.51	QCI-1.51	N/A
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Equipment Testing by DPSO

QCI-3.19	QCI-3.19	N/A
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Procuring Welding Materials

QCI-4.01	QCI-4.01	QCI-4.01
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Handling & Storing Gaskets & Packings

QCI-4.31	QCI-4.31	QCI-4.31
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10CFR50 APPENDIX B CRITERION AND PROGRAM ELEMENTS

FULL QA

LIMITED QA

NON-QA

Criterion VIII - Identification & Control
of Materials, Parts, & Components

Identification of Items Covered by the Fire Protection
Quality Assurance Program

QCI-1.39

QCI-1.39

QCI-1.39

Identification At Receiving

QCP-1.06

QCI-1.06 (2)

QCI-1.06 (2)

Control and Identification during Storage

QCI-1.36

QCI-1.36 (3)

QCI-1.36 (3)

QCP-1.36

QCP-1.36 (3)

QCP-1.36 (3)

QCP-1.52

QCP-1.52 (3)

QCP-1.52 (3)

Transfer of Traceability Identification

QCP-1.50

QCP-1.50

QCP-1.50

Criterion IX - Control of Special Processes

Work Control

QCI-1.07

Not Required

N/A

Protective Coatings

QCI-2.12

Not Required

N/A

QCP-2.12

Not Required

N/A

Cable Splicing

QCI-3.06-4

Not Required

N/A

QCP-3.06-4

Not Required

N/A

Bending Instrument Lines

QCI-3.13-5

Not Required

N/A

QCP-3.11

Not Required

N/A

Pipe Bending

QCP-4.10-17

Not Required

N/A

Welding Process Control

QCI-4.03

QCI-4.03

QCI-4.03

Installation of Gaskets & Packings

QCI-4.31

QCI-4.31

QCI-4.31

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FULL QA

LIMITED QA

NON-QA

Criterion X - Inspection

Anchor Testing	QCP-1.14	Non Seismic	N/A
Supports	QCP-4.23 Series	QCI-1.25	QCI-1.25
Baseplate Gaps	QCP-1.42-2	Non Seismic	N/A
Mechanical fire protection system (including carbon dioxide and halon storage vessels), pumps, piping, and valves.			
Location	QCP-4.10-2	QCI-1.39(5)	QCI-1.25
Clearance (Seismic)	QCP-4.10-24	Non Seismic	N/A
Slope	QCP-4.10-2	QCI-1.25	QCI-1.25
Welding	QCP-4.13 Series	QCI-4.03	QCI-4.03
Flange Bolting	QCP-1.42-1	QCI-1.39(6)	QCI-1.25
Pipe Threading	QCP-4.10-4	QCI-1.25(15)	QCI-1.25
Arc Strikes	QCP-4.10-18	QCI-1.22	QCI-1.22
Valves (Class A,B,C,D)	QCP-4.10-9	Non Code	Non Code
	QCP-4.10-3	Non Code	Non Code
Valves (Class G,H)	QCP-4.10-2	QCP-4.10-2	QCI-1.25
Equipment	QCP-4.07-1	QCP-4.07-1	QCI-1.25
	QCP-4.07-3	QCP-4.07-3	QCI-1.25
Couplings	QCP-4.07-2	QCP-4.07-2	QCI-1.25
Insulation	QCP-4.49	QCP-4.49	QCI-1.25
Coating	QCP-4.10-13	QCP-4.10-13	QCI-1.25
Maintenance	QCP-1.52	QCP-1.52	QCI-1.25
Heating, Ventilating, air-conditioning system fire and smoke dampers, and duct fireproofing (if specified).			
Duct	QCP-4.27	QCP-4.27	QCI-1.25
Dampers	QCP-4.27	QCP-4.27	QCI-1.25

10CFR50 APPENDIX B CRITERION AND PROGRAM ELEMENTS

FULL QA

LIMITED QA

NON-QA

Electrical

Mechanical Fire Suppression Systems
Fire detection systems including detectors,
panels, central processing units, alarm
stations, actuation circuits, and related
wiring.
Emergency lighting system (eight-hour battery
packs).
Emergency communication systems (related
portable radios and fixed repeater systems).
Fire door related control circuits.
HVAC Fire and Smoke Damper Controls

See General below
See General below (11)

QCI-1.25
QCI-1.25

See General below (12)

QCI-1.25

See General below (13)

QCI-1.25

See General below
See General below

QCI-1.25
QCI-1.25

General

Cable Installation
Cable Term/Insulation
Conduit
Cable Tray
Equipment
Welding
Overload Protection
Internal Wiring
Splicing
Supports

QCP-3.05	QCP-3.05 (10)	SOP-14
QCP-3.06-3	QCP-3.06-3(10)	SOP-14
QCP-3.03	QCI-1.25	SOP-14
QCP-3.04	QCI-1.25	QCI-1.25
QCP-3.06-7	QCP-3.06-7(9)	QCI-1.25
QCP-4.13 Series	QCI-4.03	QCI-4.03
QCP-3.06-1	QCP-3.06-1(9)	QCI-1.25
QCP-3.06-2	QCP-3.06-2(9)	QCI-1.25
QCP-3.06-4	QCP-3.06-4(9)	QCI-1.25
QCP-3.09	QCI-1.25	QCI-1.25



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FULL QA

LIMITED QA

NON-QA

Civil

Mechanical and electrical fire barrier penetration seals and fire stops.	QCP-1.55	QCP-1.55	
Fire doors, frames, hardware.	QCP-2.18	QCP-2.18	
Fire retardent cable coatings.	QCP-1.55	QCP-1.55	
Fire barriers	QCP-2.16	QCP-2.16	
Structural steel fireproofing.	QCP-2.16	QCP-2.16	
Welding	QCP-4.13 Series	QCP-4.13 Series	QCI-4.03
Backfill over buried piping	QCP-2.01	QCP-2.01	
	QCP-2.06	QCP-2.06	
Concrete over buried piping	QCP-2.02	QCP-2.02	

Instrumentation

Temperature switches	QCP-3.06-7	QCP-3.06-7	QCP-3.06-7 (9)
Valve stroking	QCP-3.18	QCP-3.18 (8)	QCP-3.18 (8)
Valve trim package gauge calibration	QCI-1.22 (7)	QCI-1.22 (7)	QCI-1.22 (7)
Valve trim package tagging	QCP-3.13-3	QCP-3.13-3(9)	QCP-3.13 (9)
Sense lines	QCP-3.11 Series	QCP-3.11 Series	QCP-1.25

Criterion XI - Test Control

Mechanical

Flushing	QCT-4.36	QCT-4.36	QCI-1.25
Hydrostatic Testing	QCT-4.37	QCT-4.37	QCI-1.25
Pneumatic Testing	QCT-4.45	QCT-4.45	QCI-1.25

10CFR50 APPENDIX B CRITERION AND PROGRAM ELEMENTS

FULL QA

LIMITED QA

NON-QA

Electrical

Mechanical fire supression systems	See General below	QCI-1.25
Fire detection testing	QCI-1.39 (11) QCI-1.39 (11) (Functional also by Pre-OP)	QCI-1.25
Heating, Ventilating, and Air Conditioning system fire and smoke jamper controls	See General below (Functional also by Pre-OP)	QCI-1.25
Fire doors, frames, hardware and related control circuits	See General below (Functional also by Pre-OP)	QCI-1.25
Emergency lighting systems (eight hour battery packs)	QCI-1.39 (12) QCI-1.39 (12)	QCI-1.25
Emergency communications systems	QCI-1.39 (13) QCI-1.39 (13) (Functional also by Pre-OP)	QCI-1.25

General

	QA	LIM.QA	NON QA
Insulation	QCT 3.06-1	OCT-3.06-1 (10)	QCI-1.25
Torque & Limit Switches	OCT-3.06-2	OCT-3.06-2 (10)	QCI-1.25
Electrical Penetrations	QCT-3.06-3	None	None
Control Functional Test	QCT-3.06-4	QCT-3.06-4 (10)	QCI-1.25
Motor Rotational Test	QCT-3.06-5	QCT-3.06-5 (10)	QCI-1.25

Civil

No testing required

Instrumentation

Sense Lines

Hydrostatic Testing	QCT-3.13	QCT-3.13	QCI-1.25
Flushing	QCT-3.14	QCT-3.14	QCI-1.25

10CFR50 APPENDIX B CRITERION AND PROGRAM ELEMENTS

FULL QA

LIMITED QA

NON-QA

Criterion XII - Control of Measuring and Test Equipment

Control of Measuring & Test Equipment

QCI-1.12

Not Required

N/A

Criterion XIII - Handling, Storage, and Shipping

Lifting & Transporting Major Components

QCI-1.18

QCI-1.18

N/A

Storage & Housekeeping

QCI-1.36
QCP-1.36

QCI-1.36 (1)
QCP-1.36 (1)

QCI-1.36 (1)
QCP-1.36 (1)

Storage & Issue & Control of Welding Materials

QCI-4.01

QCI-4.01

QCI-4.01

Handling & Storage of Gaskets & Packings

QCI-4.31

QCI-4.31

QCI-4.31

Maintenance During Storage

QCP-1.52

QCP-1.52 (4)

QCP-1.52 (4)

Criterion XIV - Inspection, Test, and Operating Status

Inspection and Test Status

QCI-1.40

QCI-1.40

QCI-1.25

Hold Orders

QCI-1.23

QCI-1.23

QCI-1.23

Remaining Work Identification

QCI-1.22

QCI-1.22

QCI-1.22

Temporary Conditions

QCI-3.10

QCI-3.10

QCI-1.25

10CFR50 APPENDIX B CRITERION AND PROGRAM ELEMENTS

FULL QA

LIMITED QA

NON-QA

Criterion XV - Nonconforming Materials,
Parts, or Components

Nonconforming Items

QCI-1.02

QCI-1.02

N/A

Criterion XVI - Corrective Action

Corrective Action

QCI-1.02
QCI-1.02-1

QCI-1.02
QCI-1.02-1

N/A
N/A

Handling Allegations

QCI-1.31

QCI-1.31

N/A

Dispositioning Deviations & Deficiencies

QCI-1.48
QCI-1.49

QCI-1.48
QCI-1.49

N/A
N/A

Trend Analysis

QCI-1.58

QCI-1.58

N/A

Criterion XVII - Quality Assurance Records

Preparation and Maintenance of Records

QCI-1.08

QCI-1.08

QCI-1.25

Record Accountability

QCI-1.40

QCI-1.40

QCI-1.25

Criterion XVIII - Audits

Audits are the responsibility of the Office
of Quality Assurance.

10CFR50 APPENDIX B CRITERION AND PROGRAM ELEMENTS

FULL QA

LIMITED QA

NON-QA

-
- Notes:
- (1) Housekeeping in all areas is within the scope of this procedure and certified inspection documentation is filed LOP. Storage of material and equipment is verified as in accordance with procedural requirements but no specific documentation is generated.
 - (2) Materials and equipment are verified for contract conformance. Conformance is documented on form TVA 209 "Receiving Report" which is filed with the contract as an LOP document.
 - (3) Identifiability is routinely maintained by the REU. No specific documentation of identification inspection is maintained.
 - (4) Maintenance during storage is routinely verified by the REU. No specific documentation of maintenance inspection is maintained.
 - (5) Location and configuration of pipe and valves, verified by the REU and documented on Attachment F to QCI-1.39.
 - (6) Flange bolting and pipe threading verified by REU with an acceptable hydro and documented on Attachment G to QCI-1.39.
 - (7) Performed by NUC PR, tracking only by CONST
 - (8) Performed and documented by QC, documentation tracked and retained by REU
 - (9) Performed and documented by REU, tracked and retained by REU
 - (10) The listed procedures (QCP) or tests (QCT) are used to perform the inspection or testing activities but the quality assurance documentation of that procedure is not generated. They are performed and tracked by the REU and documented on attachments H, I, J and K.

10CFR50 APPENDIX B CRITERION AND PROGRAM ELEMENTS

FULL QA

LIMITED QA

NON-QA

-
- (11) Verification of successful completion of specified functional testing specified in G-73 is accomplished by completion attachment B in accordance with WBN QCI-1.39.
 - (12) Verification of successful completion of specified functional testing specified in G-73 is accomplished by completion attachment C in accordance with WBN QCI-1.39.
 - (13) Verification of successful completion of specified functional testing specified in G-73 is accomplished by completion attachment D in accordance with WBN QCI-1.39.
 - (14) Completion of installation reported by crafts, verification of installation made by termination inspection (QCP-3.06-3) by REU.
 - (15) Threaded connections accepted based on acceptable hydro.

FIRE PROTECTION SYSTEMS AND FEATURES
TEST VERIFICATION

Test No XE

FIRE DETECTION SYSTEMS

System and Boundary _____

The following tests have been successfully completed on the fire detection systems (including detectors, panels, central units, alarm stations, actuation circuits, and related wiring) as applicable for the features within the boundary listed above.

<u>TEST</u>	<u>ACCEPTED INITIAL</u>
a. All fire detection system field wiring has been tested for grounds and short circuits.	_____
b. The loop resistance of all detector circuits has been measured and does not exceed the value specified in the manufacturer's instructions.	_____
c. All ionization and photoelectric detectors have been tested for response to chemical smoke.	_____
d. All heat detectors have been tested for response to a heat source.	_____
e. All ionization detectors have been tested for sensitivity in accordance with manufacturer's instructions.	_____
_____	_____
Responsible Engineer	Date
_____	_____
Verification Engineer	Date



FIRE PROTECTION SYSTEMS AND FEATURES Test No XD
TEST VERIFICATION

EMERGENCY LIGHTING SYSTEMS
(EIGHT-HOUR BATTERY PACKS)

System and Boundary _____

Functional testing of installed system features within the above boundary has been performed. The testing has been evaluated as demonstration of operability of each lighting fixture under loss of normal 120 volt AC power.

Responsible Engineer

Date

Verification Engineer

Date



FIRE PROTECTION SYSTEMS AND FEATURES
TEST VERIFICATION

Test No XC

EMERGENCY COMMUNICATION SYSTEMS
(Portable Radios and Fixed Repeater Systems)

System and Boundary _____

Functional testing of installed system features within the boundary listed above has been performed. The testing has been evaluated as demonstration of operability of the systems.

Responsible Engineer

Date

Verification Engineer

Date



Verification of Fire Protection Piping and Valve Location and Configuration

WBNP-QCI-1.39 ATTACHMENT F
Test No XA LOP

PIPE SEGMENT

SEGMENT DRAWING _____ R _____

FLOW DIAGRAM _____ R _____

PIPING CLASS _____

_____ _____
Responsible Engr Date

Pipe Location Verified by visual inspection of accessible portions to + 6 inches inside buildings, + 2 feet in the yard.

_____ _____
Verified By Date

Configuration verified in accordance with the listed flow diagram.

_____ _____
Verified By Date

REMARKS: _____

Verification of Flange Bolting on Fire Protection Piping

WBNP-QCI-1.39 ATTACHMENT G
Test No XZ LOP

PIPE SEGMENT IDENTIFIER _____

SEGMENT DRAWING _____

PIPING CLASS _____

RESPONSIBLE ENGR DATE

- (1) Verify bolt threads protrude a minimum of 1 thread
- (2) Verify nuts are tightened uniformly and cannot be loosened by hand
- (3) Verify gaskets are installed and visually appear uniformly compressed

REMARKS: _____

VERIFIED BY ENGR DATE

VERIFICATION OF TORQUE AND LIMIT
SWITCH TESTS ON FIRE PROTECTION
ELECTRICAL EQUIPMENT

WBNP-QCI-1.39
Test No E2

ATTACHMENT I
LOP

EQUIPMENT IDENTIFIER _____

DRAWING _____

PREREQUISITE

Cable installation and terminations have been verified. Problems encountered are listed below (and attached if necessary) and have been resolved prior to initiating the test.

VERIFICATION ENGINEER

DATE

TESTING

Torque and limit switch tests have been successfully completed in accordance with QCI 3.06-2, Rev. _____ for the electrical equipment listed above.

RESPONSIBLE ENGINEER

DATE

VERIFICATION ENGINEER

DATE

VERIFICATION OF ELECTRICAL CONTROL
FUNCTIONAL TEST ON FIRE PROTECTION
ELECTRICAL EQUIPMENT

WBNP-QCI-1.39 ATTACHMENT J
Test No E3 LOP

EQUIPMENT IDENTIFIER _____

DRAWING _____

PREREQUISITE

Cable installation and terminations have been verified. Problems encountered are listed below (and attached if necessary) and have been resolved prior to initiating the test.

VERIFICATION ENGINEER DATE

TESTING

Functional testing on the associated control and annunciation has been successfully completed in accordance with QCI 3.06-4, for the electrical equipment listed above.

RESPONSIBLE ENGINEER DATE

VERIFICATION ENGINEER DATE

VERIFICATION OF MOTOR ROTATIONAL
TEST ON FIRE PROTECTION
ELECTRICAL EQUIPMENT

WBNP-QCI-1.39
Test No E4

ATTACHMENT K
LOP

EQUIPMENT IDENTIFIER _____

DRAWING _____

PREREQUISITE

Cable installation and terminations have been verified. Problems encountered are listed below (and attached if necessary,) and have been resolved prior to initiating the test.

VERIFICATION ENGINEER

DATE

TESTING

A motor rotational has been successfully completed in accordance with QCI 3.06-4 for the electrical equipment listed above.

RESPONSIBLE ENGINEER

DATE

VERIFICATION ENGINEER

DATE

ENCLOSURE 3

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
WBNP-QCI-1.25, R6, CONTROL OF AS-CONSTRUCTED DRAWINGS

Page 8 of 11, section 6.3.6.1 provides the clarification of status codes used in the "as-constructed" title block as requested by inspectors Miller and Conlin during the November 28, 1983, teleconference call. Please note that paragraph 6.3.6.1.2 defines As-Constructed (AC) as "built as designed with approved changes and/or incomplete work." Paragraph 6.3.6.1.3 defines As-Designed (AD) as "built as designed with no changes."

6.3 Guidelines For Determining Fire Protection Limited Quality Assurance Boundaries on Drawings (EP-1.55)

- 6.3.1 Each construction and procurement drawing showing features covered by the limited fire protection quality assurance program shall comply with one of the following:
- 6.3.1.1 A "Q" designation shall be entered in the Drawing Information System, or
- 6.3.1.2 A "Q" in the drawing title block. (G-73)
- 6.3.2 The features covered by the fire protection limited quality assurance program shall be identified on construction and procurement drawings by using notes, boundary markings, or symbols. Any of the following methods may be used, if program boundaries are clearly defined:
- 6.3.2.1 State in a note that all features shown on the drawing are covered by the fire protection limited quality assurance program.
- 6.3.2.2 List in a note the specific features covered by the fire protection limited quality assurance program.
- 6.3.2.3 State in a note that all but specifically listed features are covered by the fire protection limited quality assurance program.
- 6.3.2.4 State in a general note that all features shown in a drawing series are covered by the fire protection limited quality assurance program.
- 6.3.2.5 State in a note that fire protection limited quality assurance boundaries are defined in another referenced drawing series. This note is appropriate for drawings such as mechanical piping drawings or electrical connection diagrams if the program boundaries can be clearly defined on design criteria drawings (or flow diagrams) or schematic diagrams, respectively, and if the referenced drawing series will be issued to CONST.
- 6.3.2.6 Mark the fire protection limited quality assurance boundaries in the body of the drawing.

Example:

