Tennessee Valley Authority, Post Office Box 2000, Spring City, TN 37381-2000

May 27, 2010

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN P1-35
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Unit 2 — 10 CFR 50.4
NRC Docket No. 50-391

Subject: **WATTS BAR NUCLEAR PLANT (WBN) UNIT 2 – REQUEST FOR ADDITIONAL INFORMATION REGARDING CONSTRUCTION REFURBISHMENT PROGRAM PLAN (TAC NO. MD6581)**

This letter responds to NRC's Request for Additional Information (RAI) dated April 19, 2010 (Reference 1) regarding the WBN Unit 2 Construction Refurbishment Program. In Reference 1, NRC staff indicated that it needs additional information to support their review of TVA Procedure 25402-000-GPP-0000-TI216, "WBN Unit 2 Completion Project Refurbishment Program," that was submitted by TVA's letter dated December 9, 2008 (Reference 2). As delineated in the procedure, the purpose of the Refurbishment Program is to ensure that WBN Unit 2 plant equipment meets its original licensing, design, and equipment vendor specifications by performing inspections/evaluations, refurbishment/replacement, and system testing. This letter augments the information provided by TVA in letters dated July 8, 2009, (Reference 3), and February 5, 2010 (Reference 4), which responded to NRC's RAI letters dated April 28, 2009 (Reference 5), and August 31, 2009 (Reference 6), respectively.

The Enclosure provides the NRC questions and TVA's responses. There are no regulatory commitments contained in this letter.

If you have any questions, please contact William Crouch at (423) 365-2004.

Sincerely,

M. Bajestani

Masoud Bajestani
Watts Bar Unit 2 Vice President

References:

1. NRC letter dated April 19, 2010, “Watts Bar Nuclear Plant, Unit 2 – Request for Additional Information Regarding Construction Refurbishment Program Plan (TAC NO. MD 6581)” (ML101060295)

2. TVA letter dated December 9, 2008, “Watts Bar Nuclear Plant, Unit 2 – Licensing Basis Preservation and Construction Refurbishment Program for Structures, Systems and Components (SSCs) (TAC NO. MD6311)” (ML083460177)

3. TVA letter dated July 8, 2009, “Watts Bar Nuclear Plant, Unit 2 – Response to Request for Additional Information on Program for Construction Refurbishment (TAC NO. MD6581)” (ML091940084)

4. TVA letter dated February 5, 2010, “Watts Bar Nuclear Plant, Unit 2 – Construction Refurbishment Program Additional Information.” (ML100470428)

5. NRC letter dated April 28, 2009, “Watts Bar Nuclear Plant, Unit 2 – Licensing Basis Preservation and Construction Refurbishment Program for Structures, Systems and Components (SCCs)(TAC NO. MD6311)” (ML090990533)

6. NRC letter dated August 31, 2009, “Summary of August 6, 2009, Meeting with Tennessee Valley Authority (TVA) Regarding Watts Bar Unit 2 Construction Refurbishment Program” (ML092380145)

Enclosure:

Request for Additional Information - Refurbishment Program

cc (Enclosure):

U. S. Nuclear Regulatory Commission
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Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, GA 30303-1257

NRC Resident Inspector Unit 2
Watts Bar Nuclear Plant
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ENCLOSURE

Request for Additional Information – Construction Refurbishment Program Plan

This enclosure provides TVA's responses to NRC's requests for additional information on TVA Procedure 25402-000-GPP-0000-TI216, "WBN Unit 2 Completion Project Refurbishment Program."

NRC Request:

1. *For active and passive electrical components that will be refurbished and not replaced, TVA needs to consider the effects of shelf life, pre-aging and other degradation factors.*

   a. *Provide a discussion of the basis, methodology, and criteria used to define the categories of electrical components, to determine whether to replace or refurbish, and to establish the actions needed to refurbish specific components. Include examples to assist in understanding the implementation process on a component commodity.*

   TVA Response:

   TVA Procedure 25402-000-GPP-0000-TI216, "Watts Bar Unit 2 Completion Project Refurbishment Program" (TI216), controls the refurbishment and replacement of equipment to address issues of shelf life, pre-aging, and other degradation factors. The majority of active safety-related components are being replaced. The criteria for replacement were:

   - If the equipment is passive, TVA will inspect and/or refurbish it.
   - If the equipment is active, it will be replaced unless the device is of relatively simple design (e.g., hand switches) or has well established refurbishment processes (e.g., motors, breakers).

   1. Active Electrical Components

      The following are examples of equipment that is not being replaced, and descriptions of the associated inspections and/or refurbishment activities are provided below:

      A. Non–Environmental Qualification (EQ) electromechanical relays/contactors which do not make use of electronics or diaphragms

         The following inspections and testing will be performed:

         1. A visual inspection will be performed for cleanliness, missing mounting hardware, missing terminal screws, degradation of terminal surfaces, and cracked or broken or degraded relay components.

         2. Missing parts will be replaced individually with fully qualified components, or the problem will be corrected by replacing the entire relay.

         3. Contact development will be verified against TVA drawings.

4. Coil resistance will be verified to be acceptable.

5. Contact resistance will be verified to be less than one ohm with the contact closed (normally open contacts will be closed by energizing the relay).

6. Relay operation will be verified to be smooth with no evidence of binding by electrical operation at nominal control voltage.

7. Latching relays will be verified to latch and unlatch smoothly by electrical operation at nominal control voltage.

8. Vendor Operating Experience (OE), internal OE, and notices will be implemented on the relays.

B. Non-EQ Hand Switches

The following provides an example of how non-EQ hand switches will be refurbished. The example is based upon Westinghouse W2 switches in the main control room. The process for other vendor's switches will be similar and adjusted to match the characteristics of each type switch. The W2 switch refurbishment will be performed by an independent vendor with an approved 10 CFR 50, Appendix B Program.

1. Inspect the switch for damage.

2. Perform functional test of the switch.

3. Perform dielectric test, as appropriate.

4. Perform current carrying test.

5. Test indicating lights.

6. Check resistance of the contacts.

7. If any test/inspection fails, replace and retest the components or subcomponents.

8. Verify that for each switch sent to a vendor that a Certificate of Compliance is received that documents the switch performs to design requirements.

Notes: a) EQ hand switches are being replaced and therefore are not applicable for this item.

b) Other switches will be refurbished by TVA with criteria specified in the refurbishment procedure.

C. Non-EQ and EQ - Medium Voltage Motors

The inspection and testing of 1E Medium Voltage Motors is being performed by TVA Power Service Shop (qualified vendor) and include the following actions:

1. Perform external inspections.

2. Disassemble the motor.

3. Steam clean or hand clean the motor, as applicable.

4. Perform stator inspections, which includes:

    a. Clamping.
    b. Blocking.
    c. Checking temperature elements.

5. Perform rotor inspections, which includes:

    a. Identifying broken bars, including Growler test to identify any open rotor bars.
    b. Checking shaft dimensions.
    c. Run out.
    d. Balancing.

6. Inspect/rework or replace bearing, which includes:

    a. Checking housing dimensions.
    b. Replacing oil seals.

7. Reassembling motor.

8. Performing dielectric and bridge testing.

D. Non-EQ Draw out Breakers

The draw out type circuit breakers which have been in service supporting Unit 1 have been maintained under the Unit 1 circuit breaker program. Circuit breakers installed in Unit 2 will be within their preventive maintenance periodicity. If a draw out type circuit breaker requires refurbishment to bring it back into periodicity, the following actions will be taken:

The breakers will be sent to the Original Equipment Manufacturer (OEM) for refurbishment, and the following actions will be performed under the vendor's approved 10 CFR 50 Appendix B Program:

1. Disassemble the circuit breaker to lowest practical components.

2. Clean and inspect the circuit breaker components to identify any excessively worn or damaged parts.
3. Replace damaged and excessively worn parts and components.
4. Assemble and lubricate contact, sliding, and pivot surfaces within the circuit breaker.
5. Perform mechanical adjustments, mechanical tests, and electrical testing to establish "as left" condition of the circuit breaker.
6. Provide Product Quality Certification.

2. Passive Electrical Components:

The following passive electrical components will be inspected and replaced, if needed:

A. Terminal blocks - A visual inspection will be performed for:

1. Cleanliness.
2. Missing mounting hardware.
3. Missing terminal screws.
4. Broken insulator barriers between terminals.
5. Missing label strips (where applicable).
6. Degradation of terminal surfaces.
7. Cracked or broken terminal blocks.

Missing parts will be replaced/evaluated individually or the entire terminal block will be replaced.

B. Penetrations – For Electrical Penetration Assemblies (EPA), TVA contacted Mirion Technologies (formerly Conax, the OEM) for their inspection criteria in order to ensure compliance with their program to refurbish EPAs to a service-ready condition. Based on the OEM recommendations, the following actions will be performed:

1. Inspect penetrations to OEM recommendations.
2. Inspect for missing components.
3. Align and torque loose and misaligned feed thru sub-assemblies in accordance with vendor requirements.
4. Clean and inspect pigtail conductors for insulation degradation and damage.
5. Replace EQ splices.
6. Perform megger tests on conductors with replaced splices.
7. Perform leakage test.

ENCLOSURE

Request for Additional Information – Construction Refurbishment Program Plan

NRC Request:

b. Describe the methodology for adjusting the qualified or design life of components to account for aging during the layup period (rebaseline). Include examples to assist in describing the program elements and implementation of this methodology.

TVA Response:

For the period of time that the component has been in a layup state, the EQ aging calculation will be performed using a bounding ambient temperature and accumulated radiation dose for the layup period. Generally, the temperatures during the layup period are much less than the temperatures seen during component operation. Therefore, based on the Arrhenius equation, the impact to the overall qualified life is minimal (refer to Section 2.c for discussion on aging of cables). This assessment is documented in the associated EQ Binder for the component type.

As an example, the qualified life of the Safety Injection Pump Motor is 49 years assuming no layup period. For this motor to have a shortened 40 year life considering a layup period of 35 years would require the layup temperature to be 86 ºC (186.8ºF). Since the motor is in an ambient environment, the actual layup temperatures were much less than this value.

NRC Request:

c. Identify those industry standards that govern refurbishment of electrical equipment, and describe how TVA will utilize these standards to refurbish equipment.

TVA Response:

For equipment being inspected and refurbished away from site, each vendor will have an approved 10 CFR 50 Appendix B Program in which TVA will receive certification of work performed. The inspection criteria for equipment being refurbished at the site will be in accordance with vendor criteria either from the vendor maintenance documentation or specific criteria developed for TVA to be used at WBN.

For Medium Voltage Motors there are several EPRI documents referenced in the TVA motor refurbishment procedures that were used in their development:

- EPRI Document 1000897, “Repair and Reconditioning Specification for AC Squirrel-Cage Motors with Voltage Ratings of 2.3 kV to 13.2 kV”
- EPRI Document EL 5036 V16, “Power Plant Electrical Reference Series - Insulation Condition of Large Rotating Machines”
- EPRI Document EL 5036 V17, “Power Plant Electrical Reference Series - Guide for Rewinding and Reconditioning Medium Voltage Electric Motors”

- EPRI Document GS 7352, "Manual of Bearing Failures and Repair in Power Plant Rotating Equipment"
- EPRI NP-6407, "Guidelines for the Repair of Nuclear Power Plant Safety-Related Motors"
- EPRI NP-7502, "Electric Motor Predictive and Preventive Maintenance Guide

NRC Request:

2. *Describe the actions being taken to assess the conditions of electrical cables that have been in lay-up, including any evaluations and testing to ensure that the cables important to safety meet design basis requirements. The discussion should address, and include examples as necessary to aid in the description:*

   a. *The effect of the long-term layup in a de-energized state.*

      TVA Response:

      The ampacity of safety-related cables has been evaluated for two-unit operation. Cables which could exceed their rating during two-unit operation are being replaced. Safety-related cables which have not been subject to heating near their temperature rating are not expected to show degradation when in a non-submerged environment provided that installation was performed using proper industrial practices. The Corrective Action Program Plans For Cable and Electrical Issues, Tennessee Valley Authority Watts Bar Nuclear Plant, Unit 2, Docket No. 50-391, provides assurance that the safety-related cables were installed appropriately or have been reworked or replaced. Inspections performed include:

      - The safety-related cables have been inspected at both endpoints and in boxes for damage, identification of splices, and assessment of training radius.
      - Safety-related cables subject to long vertical drops are being evaluated for excessive drops. Cables will be supported and sections replaced, if required.
      - Safety-related cables/conduits are being assessed for external heat source effect (proximity to hot pipe) and being re-worked, if warranted.
      - Medium voltage safety-related cables are being Very Low Frequency (VLF) tested, including a dielectric test.
      - 10 CFR 50.49 multi axial cables (coax and triax) are being replaced.

   b. *The methodology for re-establishing the design life of all WBN Unit 2 cables. Provide specific details, including examples, on how the cables are being evaluated and the criteria that will be used to adjust the design life. Identify any industry standards used to assess conditions and establish design life.*

      TVA Response:

      For safety-related cables not subject to 10 CFR 50.49 requirements, there is no regulatory requirement to demonstrate qualified life. For safety-related cables in

a mild environment, the cables are not subject to conditions that would cause them to exceed the manufacturer's and industry standard ratings.

However, when cable was purchased at WBN, the same specification was used for purchasing non-(EQ) cable as EQ cable. Therefore, the EQ evaluation will bound the non-EQ cable (Refer to 2.c). As discussed in NUREG-1801, deterioration of non 10 CFR 50.49 cable is not a concern unless the cable is exposed to a localized adverse environment.

The Unit 2 safety-related cables are being inspected for damage at the termination points and inside the enclosures. Additionally, the safety-related Unit 2 conduits are being evaluated for external heat sources, i.e., proximity to "hot pipe."

The Unit 2 safety-related cables, with exception of the cables in the valve vaults, are in areas which are environmentally controlled. Cables in the valve vault are routed in conduit and protected from water. Boxes are being inspected for any signs of water intrusion, and the cables will be evaluated and replaced if required. The safety-related Unit 2 cables are within the plant protected area. Accessible cable pull boxes and end points are being inspected for cable damage. Additionally, most cable in trays, in open areas, are coated with fire retardant material, which provides additional protection from physical damage.

c. *The treatment of any issues associated with WBN Unit 1 cables that could have adversely affected WBN Unit 2 cables. Describe the impact of heat generated by WBN Unit 1 cables that are installed next to WBN Unit 2 cables.*

TVA Response:

The Unit 2 Cable Program is based upon the operating experience from TVA's other operating nuclear plant sites. Unit 1 construction issues were addressed for Unit 2 by NRC letter dated August 31, 2009, transmitting the Safety Evaluation Report on Cable Issues (TAC No. MD9182). The only issue that OE has identified pertains to submerged medium voltage cable treeing. This is addressed at TVA's nuclear plants by periodic testing in accordance with IEEE 400.2 ("Guide for Field Testing of Shielded Power Cable Systems Using Very Low Frequency [VLF]"). Safety-related underground medium voltage cable is currently in service and required for Unit 1 operation. Additionally, the non-safety related Condenser Circulating Water (CCW) pump motor cables for Unit 2 have been tested. No degradation has been identified in WBN medium voltage underground cable (Safety Evaluation dated January 26, 2010, entitled, "Watts Bar Nuclear Plant Unit 2 – Safety Evaluation Regarding Generic Letter 2007-01, Inaccessible or Underground Power Cable Failures That Disable Accidents Mitigation Systems or Cause Plant Transients"). (TAC No. MD6730) (ML100120052)

TVA will adjust, if required, the qualified life of those Unit 2 10 CFR 50.49 cables that are in a common raceway with energized Unit 1 cables and have been subjected to higher temperatures.

For the period of time that the cable has been in a layup state, the aging calculation will be performed using:

- Bounding ambient temperature for the layup period.
- Bounding differential temperature due to adjacent cable heating.

During the layup period, the cables experienced at or near ambient temperatures (less than 40º C). When the age is analyzed using the Arrhenius equation, it can be shown that the life was not significantly impacted by the layup period. For example, the Rockbestos low voltage power cable at WBN has a 46.55 year life at 90º C. Considering this cable in layup condition for 35 years at 41.11º C (106º F), the remaining qualified life of this cable is 46.5 years at 90º C. Therefore, the effect of a 35-year layup on the cable's qualified life is negligible.

NRC Request:

d. *Provide the acceptance criteria that will be used to determine when to replace cables at WBN Unit 2. Describe how meggering of high and low voltage cables is adequate to provide an accurate indication of the condition of these cables.*

TVA Response:

The highest voltage for Class 1E cables at WBN is 6,900 volts, which is classified as medium voltage in accordance with the NEMA Standard. For medium voltage cables (6.9 kilovolts), measurements of a cable's dissipation factor (also known as tan δ) taken when energized with a VLF alternating current, sinusoidal waveform (0.1 Hz), permit differentiation between new, aged, and highly degraded insulation.

Acceptance Criteria for each Insulation Type is given in Section 19.4.7 of TVA Specification G-38, "Installation, Modification, and Maintenance of Insulated Cables Rated Up to 15,000 Volts" (G-38):

Tan δ Assessment of Aged XLPE Insulated Cables:

Tan δ at 2Vo	Differential of Tan δ	Assessment	Testing Frequency
< 1.2E-03	<0.6E-03	Good	Repeated within 5 Yrs
>or =1.2E-03	> or = 0.6E-03	Aged	Repeated annually
>or=2.2E-03	>or = 1.0E-03	Highly Degraded Replace Cable	N/A

The acceptance criteria for other insulation types, is given in Section 19.4.7 of TVA Specification G-38 (which conforms to IEEE 400.2).

For safety-related low-voltage cables rated at 600 volts or less, insulation resistance will be measured with a mega-ohm-meter (commonly called Megger). This test, while not imposing significant stress on the cable insulation, does detect gross installation damage. This is consistent with IEEE 690, "Standard for the Design and Installation of Cable Systems for Class 1E Circuits In Nuclear Power Generating Stations." The low-voltage power cables to 480-volt motors are being tested at 1000 volts with minimum acceptance criteria of 1.5 MΩ.

In the case of low-voltage power and control/signal cable, no stress has been identified which would have caused significant age degradation to the insulation. Cables are evaluated for proper installation practices, cable ends will be inspected for degradation, and external heat sources will be evaluated for impact to Unit 2 cables. Therefore, no other testing is required.

NRC Request:

e. *Describe how WBN Unit 2 cables that were used during operation of WBN Unit 1 have been monitored and evaluated.*

TVA Response:

For the Essential Raw Cooling Water (ERCW) pump motors and Emergency Diesel Generators, which support WBN Unit 1 and will support WBN Unit 2, the medium voltage cables are VLF tested periodically as part of the cable monitoring program, as described in TVA Specification G38. The cables connecting to the ERCW and Emergency Diesel Generators are the only medium voltage safety-related cables which are underground. Underground duct banks have sump pumps and are monitored for collection of water with local alarms for high water levels in the manholes. Electrical switchgear preventive maintenance and EQ inspections verify cables are not degraded at termination.

NRC Request:

f. *Describe the program to prevent submergence of cables. If any WBN Unit 2 cables have been subjected to submergence, provide a discussion to address the qualification for this environment and evaluation of the impact from this environment.*

TVA Response:

There are no safety-related Unit 2-specific cables that have been submerged, since there are no Unit 2-specific underground safety-related cables. The only safety-related cables at WBN that could have been submerged in the past are those going to common facilities such as the diesel generator building and the intake pumping station via the underground duct banks. Safety-related emergency diesel generator cables and essential raw cooling water pump cables are operational supporting Unit 1 operation. Sump pumps have been installed in

all underground duct bank manholes, which prevent submergence. The safety-related duct banks have local level and pump run time alarms. Regular operator rounds monitor for these alarms to ensure timely identification and prompt action to ensure the cabling is not submerged.

Manholes containing Class 1E cables and their sump pumps operation are verified at a periodic frequency per WBN Procedure 0-PMP-040-0065MH1, "1E Manhole and Sump Inspections." The medium voltage underground cables are periodically VLF tested in accordance with WBN PM 0713W. As part of compliance with Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients," TVA successfully tested the non-safety-related Unit 2 CCW Pump Motor medium voltage cables.

NRC Request:

g. Describe *how WBN Unit 2 cables located near Unit 1 equipment have been evaluated to determine if vibration may have adversely impacted these cables.*

TVA Response:

WBN Units 1 and 2 have defined spaces in the auxiliary building where vibrating equipment, such as pumps and fans, is located. Unit 1 is located west of column line A8 and Unit 2 on the east side of column line A8 (refer to the drawing in the Attachment to this Enclosure). The cables from the cable trays fan out in the opposite directions in order to serve their respective unit. Therefore, there are no Unit 2-specific cables near Unit 1 vibrating equipment. The same is true for Unit 1. The in-service Unit 2 equipment is under Unit 1 control and is assessed in accordance with the maintenance rule and/or 10 CFR 50.49.

NRC Request:

h. Provide a detailed discussion on the impact of ambient relative humidity, and how it will be evaluated for adverse impact on the WBN Unit 2 cables.

TVA Response:

In TVA's assessment of relative humidity and the impact to the WBN Unit 2 cabling, the following was identified:

As discussed in EPRI License Renewal Electrical Handbook 1003057:

> **Basis for Moisture Not Being a Concern for Low-Voltage Cable**
>
> Moisture is not included as an applicable stressor for low-voltage cable insulation Table 4-18 of the DOE Cable AMG [9] because the results of previous comprehensive studies have reached this conclusion. For example, there is no discussion in the Division of Operating Reactors (DOR) Guidelines [19] for environmental qualification (EQ) of electrical components concerning moisture or humidity for cables that must be capable of withstanding a loss of coolant accident (LOCA) or high energy line break (HELB). Even a more severe qualification standard, NUREG-0588 Rev. 1 [36], specifically states the following in the aging discussion in Section 4.(8): "Effects of relative humidity need not be considered in the aging of electrical cable insulation." Finally, the DOE Cable AMG Section 3.7.4 reports the results of an EPRI study that states, "...moisture-related failures of low-voltage cable are not occurring ... [and] ... The overall conclusion of the study was that moisture-related degradation is not a significant concern for general applications."

IEEE Standard 833-2005, “IEEE Recommended Practice for the Protection of Electric Equipment in Nuclear Power Generating Stations from Water Hazards” also states:

> “For the bulk of cables used in nuclear plant applications, moisture, short-term wetting, or short-term submergence is of no concern. Long-term submergence must be more carefully evaluated to ensure that the materials used in cable construction are stable or are protected by a barrier system. Of particular concern is certain medium voltage insulation systems susceptible to treeing, materials that are plasticized in water and the glass and acrylate coatings used in fiber optic cables. Additionally, the potential impact of water on the circuit (for example, changes in impedance or drop in insulation resistance) should be evaluated where applicable. Special attention must be given to environmentally qualified cables that are subject to long-term submergence, since this condition is typically not evaluated by conventional qualification testing.”

TVA has concluded that relative humidity, as discussed above, is not a stressor for cables and therefore is not considered to impact Unit 2 cables.

NRC Request:

i. Describe the acceptance criteria for ‘significant dust’ and how it will be applied/measured.

TVA Response:

As discussed above, EQ equipment not being replaced is limited to Medium Voltage Motors, Containment Electrical Penetrations, and Terminal Blocks. Medium Voltage Motors will be cleaned during refurbishment. Medium Voltage Motors and penetrations are being cleaned during the inspection/refurbishment. Inspection of the terminal blocks involves a visual qualitative inspection, with cleaning required, as warranted. All electrical boards and busses are under Unit 1 control and are in the Unit 1 maintenance inspection program. Specifically, for these boards there are scheduled "preventive maintenance" activities as part of the WBN Unit 1 Maintenance Program, which includes periodic inspection and cleaning of the boards.

NRC Request:

3. *For the components that are not being replaced, describe how the program ensures that environmental qualification requirements for these components were maintained during the period of lay-up.*

TVA Response:

Unit 2 components that are not being replaced can be divided into two categories: (1) Unit 2 components required for Unit 1 operation, and (2) Unit 2 components not utilized in Unit 1 operation. The Unit 2 components required for Unit 1 operation have been maintained in the Unit 1 EQ Program. The EQ-related maintenance requirements for EQ components are defined in the Qualification Maintenance Data Sheet (QMDS) located in Tab G of the WBN EQ binders.

For Unit 2 EQ components that are being added to the EQ Program for Unit 2 startup (e.g., Unit 2 components not utilized in Unit 1 operation), but are not being replaced, each maintenance requirement specified in the applicable QMDS will be baselined as part of the EQ Program implementation prior to startup.

As discussed in question 1, EQ equipment not being replaced is limited to:

- Medium Voltage Motors
- Containment Electrical Penetration Assemblies
- Terminal Blocks

These devices have been maintained in controlled environments and in a less severe environment than Unit 1.

- The Medium Voltage Motors will have:

    1. Extensive inspection to ensure critical tolerances are met.
    2. Wear susceptible components replaced.
    3. Windings cleaned and dielectric tested.

4. Rotors inspected and tested to ensure bar integrity.

This work is being performed by TVA's Power Service Shop, which has an approved Appendix B Quality Assurance program.

- Penetrations are being inspected in accordance with vendor's recommendation to ensure qualification.

- Terminal blocks will be inspected for damage or other degradation.

ATTACHMENT

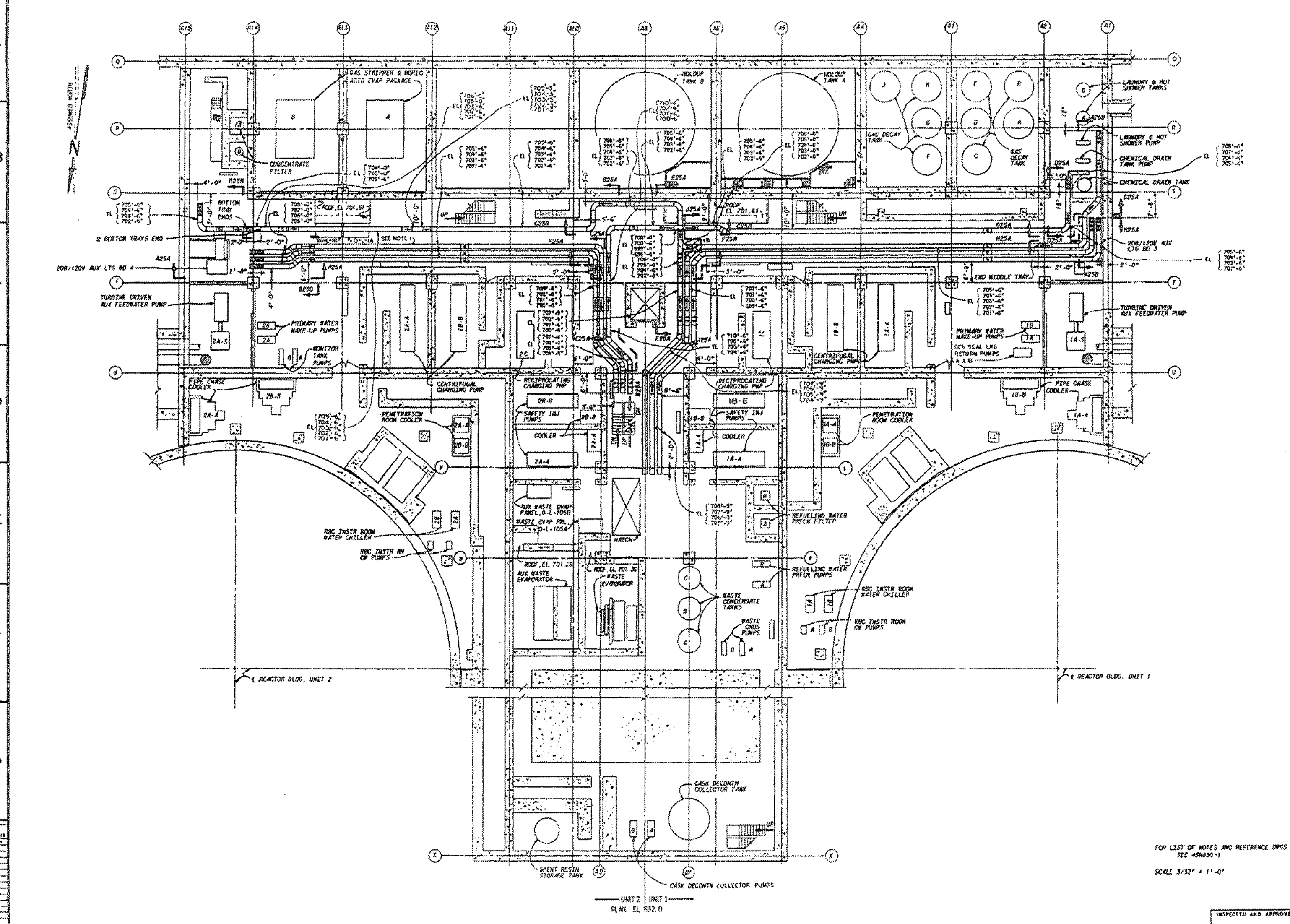
REQUEST FOR ADDITIONAL INFORMATION – CONSTRUCTION REFURBISHMENT PROGRAM PLAN

AUXILIARY BUILDING – UNITS 1 & 2

Conduit & Grounding Cable Trays

EL 692.0 COL A1-A15, Q-X

Plan & Details



GAS STRIPPER & BORIC ACID EVAP PACKAGE
HOLDUP TANK B
HOLDUP TANK A
GAS DECAY TANK
LAUNDRY & HOT SHOWER TANKS
LAUNDRY & HOT SHOWER PUMP
CHEMICAL DRAIN TANK PUMP
CHEMICAL DRAIN TANK
CONCENTRATE FILTER
2 BOTTOM TRAYS END
208/120V AUX LTG BD 4
208/120V AUX LTG BD 3
END MIDDLE TRAY
TURBINE DRIVEN AUX FEEDWATER PUMP
PRIMARY WATER MAKE-UP PUMPS
MONITOR TANK PUMPS
CENTRIFUGAL CHARGING PUMP
RECIPROCATING CHARGING PMP
SAFETY INJ PUMPS
COOLER
PIPE CHASE COOLER
PENETRATION ROOM COOLER
REFUELING WATER PRECK FILTER
REFUELING WATER PRECK PUMPS
RBC INSTR ROOM WATER CHILLER
RBC INSTR RM CW PUMPS
AUX WASTE EVAP PANEL
AUX WASTE EVAPORATOR
WASTE EVAPORATOR
HATCH
WASTE CONDENSATE TANKS
WASTE CNDS PUMPS
℄ REACTOR BLDG, UNIT 2
℄ REACTOR BLDG, UNIT 1
CASK DECONTM COLLECTOR TANK
SPENT RESIN STORAGE TANK
CASK DECONTM COLLECTOR PUMPS
UNIT 2 | UNIT 1
PLAN EL 692.0
ASSUMED NORTH

NOTES:
1. THE SEPARATION BETWEEN PARALLEL CABLE TRAY RUNS SHALL BE A MINIMUM OF 3' - 1'-0" IN ALL CASES WHERE THE TRAY RUNS REST ON HORIZONTAL MEMBERS WHICH ARE ATTACHED TO VERTICAL SUPPORTS AT EACH END

FOR LIST OF NOTES AND REFERENCE DWGS SEE 45N880-1

SCALE 3/32" = 1'-0"

REVISED FOR ECN EL-690

MINOR REVISIONS

POWERHOUSE
AUXILIARY BUILDING - UNITS 1 & 2

CONDUIT & GROUNDING
CABLE TRAYS-EL 692.0, COL A1-A15, Q-X
PLAN & DETAILS

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED	RECOMMENDED	APPROVED

INSPECTED AND APPROVED FOR ISSUE

KNOXVILLE 12-12-74 | 85 | E | 45W880-11 R2

DRAVO I 8
DRAVO I P