

Department of Energy

Washington, DC 20585

February 14, 1997

Project No. 697

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington D.C. 20555-0001
ATTN: Mr. James H. Wilson

Subject: Supplemental Information Regarding the Tritium Producing Burnable Absorber Rod (TPBAR) Lead Test Assembly (LTA) Topical Report

Gentlemen:

Reference: Letter, SM Sohinki (DOE) to JH Wilson (NRC), Submittal of Additional Information Regarding the Tritium-Producing Burnable Absorber Rod (TPBAR) Lead Test Assembly (LTA) Topical Report, February 7, 1997

In our referenced response to the staff's request for additional information regarding the topical report on the tritium-producing burnable absorber, we indicated that proposed information and revisions on the subject of quality assurance would be provided in a supplemental transmittal. The purpose of this letter is to forward such information.

Also recall that during the staff's meeting held January 22, 1997, a commitment was made to document the understood requirements between Westinghouse, the Tennessee Valley Authority (TVA), and Pacific Northwest National Laboratory (PNNL), in relation to the quality standards to which the TPBARs are contracted. A meeting was held January 31, 1997, to obtain clarifications between all the parties involved. Enclosure 1 is a copy of the minutes resulting from that meeting. A part of these minutes is also a section of the full contract (#287438-A-B9) being negotiated between TVA and PNNL, where compliance with 10 CFR 50, Appendix B, and with 10 CFR 21 is stipulated.

Enclosure 2 contains the responses to the staff's original individual questions on quality assurance. These responses supersede those draft responses provided to the staff during the January 22, 1997 meeting. Enclosure 3 contains the proposed text of the entire topical report section 7, incorporating the appropriate revisions.

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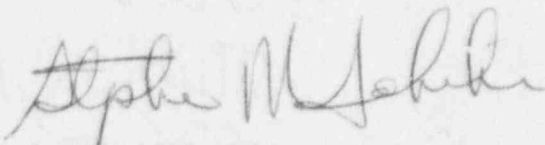
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With this transmittal, responses and clarifications have been made to all of the official NRC questions. Please call Max Clausen at 586-8217 or Richard Latorre at 586-4262 if there is a need to discuss any further questions.

Sincerely,

A handwritten signature in dark ink, appearing to read "Stephen M. Sohinki". The signature is fluid and cursive, with the first name "Stephen" being more prominent than the last name "Sohinki".

Stephen M. Sohinki
Director
Office of Commercial Light
Water Reactor Production
Defense Programs

Enclosures:
As stated



Westinghouse
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Box 355
Pittsburgh Pennsylvania 15230-0355

NDP-MLT-97-020
February 11, 1997

Mr. Jerry L. Ethridge
Pacific Northwest National Laboratory
P. O. Box 999
Richland, WA 99352

Subject: Meeting Minutes from the January 31 TPBAR LTA Meeting in Columbia, SC

Dear Jerry:

Attached are the meeting minutes from the January 31, 1997 meeting between TVA, DOE, PNNL, and Westinghouse. The primary purpose of the meeting was to confirm the Quality Assurance interface responsibilities among the program participants. A second purpose of the meeting was to facilitate communications among the participants in quality assurance and technical areas.

Attachments include the meeting minutes, a draft of Section 2.2 from the TVA project plan, the draft of the quality assurance section of the contract between TVA and PNNL, and a list of attendees.

Sincerely,

M. L. Travis, Manager
Nuclear Development Programs

MLT/cem

Attachment

cc: J. Chardos (TVA)
S. Tanner (TVA)
R. Latorre (PNNL)
M. Clausen (DOE)
W. Kelly (DOE)
S. Sohinki (DOE)

Westinghouse: Jeff Slater - slaterjl@westinghouse.com
Doug Trevett - trevetdr@westinghouse.com

- D R A F T -
TVA LTA Project Plan

2.2 Project Interfaces/Responsibilities

- 2.2.1 Battelle-PNNL is responsible to DOE for overall management of the project. They are responsible for the design and fabrication of the Tritium Target Lead Test Assemblies. This responsibility includes procurement of all material and components required for the fabrication and includes overall quality assurance oversight of the suppliers used in the process.

Battelle coordinates with TVA and Westinghouse (Fuel Supplier) to obtain all required technical input information and assures adequate reviews of design output. Battelle also coordinates with these organizations and DOE to achieve an acceptable licensing strategy to gain NRC approval of the project.

Battelle is responsible for providing to Westinghouse certification that design and fabrication of the Lead Test Assemblies comply with Battelle's QA program and meet all the technical and quality requirements of TVA.

Battelle is responsible for providing TVA and Westinghouse right of access to facilities and records for review, audit or observation of work by either Battelle or any Battelle vendor/supplier. When requested by TVA, Battelle is responsible for obtaining TVA review and concurrence with repair and accept-as-is nonconformance dispositions associated with TVA requirements.

- 2.2.2 TVA provides technical input to Battelle as required to support the design of the targets and the host fuel assemblies. Review of the design is performed through a review of the Battelle Design Report. A design change package is prepared as necessary to support the insertion and irradiation in the WBN reactor in accordance with TVA's licensing requirements.

TVA, with the support of Westinghouse, provides Owner's oversight of the design, procurement and fabrication processes implemented by Battelle to provide and deliver the LTAs to the fuel supplier.

TVA provides the service of irradiation of the tritium targets. In doing so, TVA carries out all activities necessary to receipt inspect, store and insert the targets into the WBN reactor during the first refueling in accordance with site procedures and TVA licensing requirements. During irradiation, TVA monitors for any anomalies that could be related to the tritium targets and at the second refueling removes the targets and stores them for subsequent shipment from the site by DOE.

- D R A F T -
TVA LTA Project Plan

2.2 Project Interfaces/Responsibilities

- 2.2.1 Battelle-PNNL is responsible to DOE for overall management of the project. They are responsible for the design and fabrication of the Tritium Target Lead Test Assemblies. This responsibility includes procurement of all material and components required for the fabrication and includes overall quality assurance oversight of the suppliers used in the process.

Battelle coordinates with TVA and Westinghouse (Fuel Supplier) to obtain all required technical input information and assures adequate reviews of design output. Battelle also coordinates with these organizations and DOE to achieve an acceptable licensing strategy to gain NRC approval of the project.

Battelle is responsible for providing to Westinghouse certification that design and fabrication of the Lead Test Assemblies comply with Battelle's QA program and meet all the technical and quality requirements of TVA.

Battelle is responsible for providing TVA and Westinghouse right of access to facilities and records for review, audit or observation of work by either Battelle or any Battelle vendor/supplier. When requested by TVA, Battelle is responsible for obtaining TVA review and concurrence with repair and accept-as-is nonconformance dispositions associated with TVA requirements.

- 2.2.2 TVA provides technical input to Battelle as required to support the design of the targets and the host fuel assemblies. Review of the design is performed through a review of the Battelle Design Report. A design change package is prepared as necessary to support the insertion and irradiation in the WBN reactor in accordance with TVA's licensing requirements.

TVA, with the support of Westinghouse, provides Owner's oversight of the design, procurement and fabrication processes implemented by Battelle to provide and deliver the LTAs to the fuel supplier.

TVA provides the service of irradiation of the tritium targets. In doing so, TVA carries out all activities necessary to receipt inspect, store and insert the targets into the WBN reactor during the first refueling in accordance with site procedures and TVA licensing requirements. During irradiation, TVA monitors for any anomalies that could be related to the tritium targets and at the second refueling removes the targets and stores them for subsequent shipment from the site by DOE.

- D R A F T -
TVA LTA Project Plan

- 2.2.3 Westinghouse performs fuel reload analysis required to incorporate tritium targets into the WBN reactor core during the first refueling. They provide technical input to Battelle as required to support the design of the targets and support development of licensing documentation necessary to obtain NRC approval of the project.

Westinghouse is providing to Battelle a technology transfer regarding the Manufacturing and Quality Plan (MAQP). Westinghouse is responsible for approving the MAQP developed by Battelle to ensure the MAQP contains the appropriate types of information needed by Westinghouse in support of their certification process.

Upon receipt of tritium targets from Battelle, Westinghouse installs the targets into the fuel assemblies and ships the assemblies to WBN.

Westinghouse performs QA oversight of the Battelle design and fabrication processes in support of TVA oversight.

Westinghouse is responsible for providing certification to TVA that the fuel assemblies and/or core components meet the requirements of applicable engineering drawings and specifications, and any additional requirements imposed by work orders or contract job orders. This includes certification that the associated unclassified product records are maintained by Westinghouse for safekeeping and can be produced until the expiration of the time limitations for storage of those records.

Westinghouse is responsible for providing TVA a report, prior to TVA inserting the LTAs into the reactor core, summarizing the adequacy of Battelle's QA Program and documenting resolution of all open items that impact the insertion of the LTAs into the reactor core.

Westinghouse is responsible for providing TVA right of access and Battelle limited right of access to facilities and records for review, audit, or observation of work by either Westinghouse or any Westinghouse vendor/supplier associated with the performance of the Westinghouse LTA scope of work.

- D R A F T -
TVA CONTRACT WITH BATTELLE

Quality Program/System Requirements

February 1997

The Contractor shall provide and maintain a quality program/system that complies with 10CFR50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, and maintain a positive working relationship with the U.S. Nuclear Regulatory Commission.

The Contractor shall require, in writing subcontractors of all tiers to comply with all applicable quality program/system requirements and the applicable reporting requirements of 10CFR21. The quality system and control of "Special Processes" of the Contractor and subcontractors of all tiers shall be made available for audit by Battelle to the extent practicable at all times and places.

The Contractor shall tender for acceptance only those supplies or services that have been inspected and tested in accordance with its quality program/system and have been found to conform with contract requirements.

Battelle shall provide and maintain a quality program/system that complies with 10CFR50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, and 10CFR21, Reporting of Defects and Non-Compliance. Products or services provided by Battelle to Contractor for use in the performance of the Contractor's scope of work shall meet the requirements of Battelle's quality program/system.

NOTE: "Contractor" refers to TVA

TPBAR LTA MTG

1/31/97

COLUMBIA, S.C.

JEFF SLATER

HENRY VINAY

JIM CHARDOS

STEVE TANNER

William F Kelly

Max J Clausen

Douglas R Trevett

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Jerry Ehrhridge

Richard Latorre

Steve Bales

PAUL COVINGTON

HEMANT SHAH

(W) OPBA

(W) ES&U Quality Systems

TVA Proj. MGMT

TVA Proj. Mgt/QA

DOE Task Manager

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Quality Assurance

Enclosure 2

Page 1

1. Provide a description of the components in the tritium-producing burnable absorber rod (TPBAR) lead test assemblies (LTAs) that are considered safety-related and a delineation of the portions of the TPBAR that receive PNNL's "Safety Class" QA program treatment.

Response:

The host utility has determined that the TPBARs in the LTAs do not perform a safety function consistent with the definitions in their docketed QA program (see response to item 3, below). However, consistent with 10 CFR Part 21, the design and fabrication of TPBARs are accomplished under a PNNL quality assurance program that complies with the requirements of 10 CFR 50, Appendix B. The individual subcomponents of TPBARs will have the appropriate quality assurance and 10 CFR Part 21 requirements applied to an extent commensurate with their importance to safety and consistent with provisions of 10 CFR 50, Appendix B, Criterion II, Quality Assurance Program.

2. Provide a description of how the relative safety-significance of components in the TPBAR is determined.

Response:

See response to Question 1.

3. Provide a consolidated description of the QA program controls that will govern design, fabrication, testing and installation of the LTAs. Specifically, this QA program description should contain a matrix that identifies conformance to each of the 18 Criteria of 10 CFR 50, Appendix B, as well as establishing the correlation with ASME NQA-1 1989.

Response:

The Quality Assurance Program that determines the appropriate requirements for the design, fabrication, testing and installation of the LTAs is the host utility's NRC accepted QA Program. Refer to TVA-NQA-PLN89-A, Tennessee Valley Authority's Nuclear Quality Assurance Plan accepted by NRC under Docket Nos. 390/391. In accordance with the host utility's QA program, the utility contractually requires PNNL and Westinghouse to establish, maintain, and implement a quality assurance program that meets the requirements of 10 CFR 50, Appendix B. A matrix identifying conformance to

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each of the 18 Criteria of 10 CFR 50, Appendix B is included in the host utility's NRC accepted QA Program. See response to Question 13 regarding ASME NQA-1.

4. Define the contractual relationship among the participants identified in Figure 7-1 of PNNL-11419, including a detailed description of the programmatic controls and responsibilities related to 10 CFR Part 50, Appendix B, and 10 CFR Part 21.

Response:

Battelle, operator of Pacific Northwest National Laboratory (PNNL), is procuring irradiation and technical support services from the host utility and nuclear computer code modification services from Westinghouse Electric Corporation..

The host utility is procuring QA oversight (including qualification of PNNL as a supplier), engineering, and technical support services from Westinghouse. The host utility is contractually imposing 10 CFR 50, Appendix B and 10 CFR 21 on PNNL and Westinghouse. The host utility, as licensee of the facility, is responsible for ensuring appropriate technical and quality requirements are established and complied with prior to insertion of the LTAs into the reactor core. These activities are accomplished in accordance with their NRC accepted QA Program.

The final supplier of the completed LTAs to the host utility will be Westinghouse which is an approved supplier to the host utility. Westinghouse has been contracted by the host utility to provide QA oversight of PNNL in accordance with their NRC accepted Quality Management System (QMS). Planned Westinghouse oversight activities include:

- a) Performance of a supplier qualification audit to evaluate PNNL's compliance with 10 CFR 50, Appendix B and ASME NQA-1, Basic and Supplementary Requirements. (See response to Question 13 regarding ASME NQA-1)
- b) Oversight of PNNL manufacturing operations and PNNL control of subcontractor quality.
- c) Providing the host utility a report summarizing the adequacy of the implementation of PNNL's QA program, prior to insertion of the LTAs into the core.

The host utility may conduct, in addition to Westinghouse oversight, effectiveness assessments of PNNL and PNNL's suppliers, utilizing a graded approach consistent with the importance, complexity and quantity of items and services procured. Assessments may consist of checks, reviews, verifications, examination, and witnessing of activities related

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to fabrication, testing, inspection and shipment of the LTAs. PNNL will furnish Westinghouse with certified subcomponents (TPBARs), and Westinghouse will complete the fabrication, certification, and delivery of the LTAs to the utility. Utility acceptance of the LTAs will include receipt inspection in accordance with their NRC accepted QA Program. Authorization to insert the LTAs into the core is contingent upon satisfactory results of these oversight activities.

5. Information contained in non-mandatory guidance sections (Appendices 2A-1, 2A-2, 2A-3, 3A-1, 4A-1, 7A-1, 17A-1, and 18A-1) of NQA-1, 1989, specify information that is typically found necessary by the staff to implement the programmatic requirements of 10 CFR 50, Appendix B. Provide a copy of the current PNNL QA program that implements NQA-1 and describe how the PNNL quality assurance program implements those provisions.

Response:

As indicated in response to Question 3, the Quality Assurance Program that determines the appropriate quality assurance requirements for the design, fabrication, testing, and installation of the LTAs is the host utility's NRC accepted QA Program. NRC review and acceptance of the PNNL quality assurance plan is not being requested. Determination of the acceptability of the PNNL QA program is the responsibility of the host utility. See response to Question 13 regarding ASME NQA-1.

6. Describe the PNNL Regulatory Compliance and QA program to provide audit/oversight of component and service suppliers utilized by PNNL Design and PNNL Fabrication.

Response:

The PNNL project quality assurance plan requires procurements to include appropriate quality requirements and specifies that component and service suppliers are subject to PNNL QA oversight. Suppliers are required to submit quality assurance/control plans to PNNL for review and approval. The oversight includes preaward surveys, periodic audits, in-process monitoring, source inspections, and receipt inspection of delivered products.

7. Describe what quality provisions from the PNNL QA program are passed on to component and service suppliers utilized by PNNL Design and PNNL Fabrication. Also describe how PNNL determines the acceptability of the suppliers.

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Response:

Quality requirements are established commensurate with importance to safety of the item or service being provided. Procurements for components and services require submittal of a quality assurance/control plan to PNNL for review and approval. Supplier acceptability is established based upon pre-award surveys, periodic audits, source inspections, in-process monitoring, and receipt inspection of delivered products.

8. If PNNL receives commercial grade items that are not manufactured in accordance with Appendix B QA requirements or the PNNL QA program for use in the TPBARS, describe the process employed by PNNL to determine the acceptability of those items (i.e. commercial grade item dedication).

Response:

The host utility contractually imposes compliance with 10 CFR 50, Appendix B and 10 CFR 21 by PNNL and Westinghouse. Any components received by PNNL that do not comply with the requirements specified in the procurement documents are considered nonconforming and will be handled in accordance with the corrective action program. PNNL requires that failures to comply are identified and corrected and that items are acceptable by appropriate combinations of testing, source inspection, review of supplier quality control plans, review of supplier documentation, and receipt inspection. Methods used are appropriate to the characteristics to be verified.

9. Describe the management assessments and QA audits performed by PNNL Regulatory Compliance and QA to verify the effectiveness of the PNNL QA program implementation.

Response:

The PNNL project quality assurance plan establishes requirements for periodic audits and management assessments. To date, PNNL has conducted four management assessments of QA plan implementation in the areas of overall program adequacy and implementation, training, records, and design. Fabrication activities have just recently commenced, and supplier QA oversight activities are underway. Additional management assessments and QA audits will be performed during the remainder of the project to ensure compliance with the project quality assurance plan, including fabrication. In addition, the host utility requires Westinghouse to perform QA oversight activities and provide a report to the utility on the adequacy of PNNL's QA program.

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10. Provide a description of the PNNL verification processes that will be employed to assure that TPBARs conform to design specification requirements.

Response:

The PNNL project quality assurance plan establishes requirements for source inspections, receipt inspections, review of supplier documentation, in-process and final acceptance inspections. In-process and final acceptance inspections are specified in a Manufacturing and Quality Plan (MAQP). The MAQP is reviewed and administratively approved by Westinghouse to ensure provisions for appropriate criteria are established.

11. Describe how design information will be controlled and transmitted across the interfaces between PNNL, Westinghouse, host utility organizations, and design services suppliers.

Response:

The control of design information within each organization is established by procedures in accordance with each organization's quality program. Transmittal of information between utility, Westinghouse and PNNL organizations is via designated organizational points of contact.

12. Describe the methods that will be used by host utilities to provide QA oversight of PNNL, Westinghouse, and sub-suppliers. Will Appendix B audits, surveillances, inspections be conducted by the host utility?

Response:

See response to Question 4.

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13. A limited number of licensees have committed to NQA-1. Describe how host utility quality requirements (typically conform to NRC Regulatory Guides and endorsed ANSI N45.2 series standards) were transmitted to Westinghouse and PNNL and the method whereby the PNNL quality program was found acceptable by the host licensees.

Response:

The host utility transmitted copies of their NRC accepted QA program as well as the host facility's Final Safety Analysis Report to PNNL. The host utility contractually requires PNNL and Westinghouse to establish, maintain and implement a quality assurance program that complies with 10 CFR 50, Appendix B. The method of compliance, such as use of ASME NQA-1 versus ANSI N45.2 series standards, was not stipulated by the host utility. ASME NQA-1 is the programmatic basis selected by PNNL as a means of meeting the requirements of 10 CFR 830.120 and DOE Order 5700.6C. In addition, the Westinghouse NRC accepted QMS meets 10 CFR 50, Appendix B and ASME NQA-1, Basic and Supplementary Requirements and is typically used by Westinghouse as their basis for evaluating qualified suppliers.

The utility procured QA oversight services from Westinghouse to perform a qualification audit of PNNL to evaluate PNNL's compliance to 10 CFR 50, Appendix B and ASME NQA-1, Basic and Supplementary Requirements. An objective being, based on satisfactory results, to place PNNL on the Westinghouse qualified supplier's list. See response to Question 17.

14. Identify the Westinghouse quality program (such as the NRC-approved Quality Management System) that will be applied to activities associated with the LTAs.

Response:

Westinghouse will apply their NRC-approved Quality Management System (QMS) and implementing procedures to Westinghouse activities associated with the LTAs, including QA oversight. The Westinghouse QMS, Rev. 1 was approved by NRC letter from Quality Assurance and Maintenance Branch, Division of Reactor Controls and Human factors, Office of Nuclear Reactor Regulation, dated February 23, 1996.

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15. Describe which organization is responsible for the LTA/TPBAR design. Discuss how design reviews and design verification will be carried out by this organization.

Response:

The design of the TPBARs is the responsibility of PNNL. This responsibility includes not only the design of the TPBARs to make tritium, but also the responsibility to consider the implications to safety when the LTAs are loaded into a reactor core. Tritium release levels are also considered relative to the limits identified in 10 CFR. Project procedures control documentation and independent review of analyses and calculations by the PNNL design team. In addition, a series of design reviews by independent design review boards has been initiated in accordance with a project design review plan. The design review plan includes phased reviews by personnel with appropriate experience and expertise. Utility, Westinghouse and other personnel familiar with commercial reactor design, operation and regulation participated in the design review held in December 1996.

16. Discuss how nonconforming conditions will be reported by supplier organizations to client organizations. Discuss how the client organizations will evaluate those nonconforming conditions.

Response:

PNNL addresses the reporting of nonconforming conditions through a formal mechanism established in the PNNL procurement quality system. PNNL procurement documents require that a supplier submit a "Contractor Nonconformance Request" (CNR) documenting any nonconforming condition tendered for acceptance of a variance from PNNL specifications. The supplier must describe the deficient condition, recommend a disposition and provide a justification. The supplier must submit the CNR for PNNL's review and approval. The recommended supplier disposition may be approved, modified or disapproved by PNNL and PNNL must provide an appropriate technical justification to support the disposition. During the review of the CNR, PNNL will make a determination regarding the type of verifications that are necessary to assure that CNR disposition has been completed correctly. LTA-related nonconformance reports, whether generated by PNNL or a PNNL supplier will be made available to Westinghouse and the host utility as part of the process. The host utility reserves the right to review and concur in all repair and use-as-is dispositions of nonconformances with the utility requirements. The reporting and posting requirements of 10 CFR Part 21, as passed to PNNL by the host utility and Westinghouse, will be followed and passed to subvendors as appropriate.

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17. Describe the process whereby Westinghouse qualified PNNL as an approved supplier for LTA design and fabrication.

Response:

Westinghouse has performed a qualification audit of PNNL in accordance with the Westinghouse QMS. The scope of this audit included verifying PNNL's compliance with 10 CFR 50, Appendix B and ASME NQA-1, Basic and Supplementary Requirements. As a result of the audit, Westinghouse placed PNNL on the Westinghouse Qualified Supplier List. The listing on the Westinghouse Qualified Supplier List is conditional upon:

1) satisfactory corrective action response to identified audit findings; and 2) a follow-up audit to verify PNNL QA program implementation in the manufacturing area. (No fabrication had occurred at the time of the audit.) Upon satisfactory implementation of corrective actions and closure of any findings resulting from follow-up audits, Westinghouse will update the status of PNNL to "approved."

18. Describe the process employed by Westinghouse to provide QA oversight of PNNL and sub-suppliers. Will Appendix B audits and inspections be utilized?

Response:

See response to Question 4.

19. Describe the processes that will be utilized by Westinghouse (eg. receipt inspection, dimensional and configuration verification, and material verification) to verify TPBARs conform to Westinghouse technical requirements prior to assembly in LTAs.

Response:

See response to Question 4. In addition to the activities to qualify PNNL as a qualified supplier, described above, Westinghouse will review PNNL supporting documentation certifying the TPBAR was built in accordance with the design requirements and utility's quality requirements, provide unique TPBAR identification for traceability, and perform receipt inspection in accordance with approved procedures.

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20. Describe the processes that will be utilized by host facilities (eg. receipt inspection, dimensional and configuration verification, and material verification) to confirm that LTAs are suitable for installation in the core.

Response:

As discussed in Section 6.2 of the topical report, existing host utility procedures for receipt and receipt inspection of fuel and fuel components will be used to receive the LTAs. This inspection, in combination with utility and Westinghouse assessments of TPBAR design and fabrication activities, and successful completion of a reload safety evaluation, will confirm that the LTAs are suitable for installation in the core.

21. Describe whether Westinghouse special processes (eg. welding) have been re-qualified as necessary to account for differences in TPBAR material from that typically used in LTA assemblies.

Response:

Special process procedures (including welding) will be developed and qualified by PNNL and are, therefore, not considered to be re-qualified Westinghouse special processes. The special process controls, however, will be subject to oversight by PNNL QA. Special processes will be identified and key parameters defined in the MAQP. The MAQP will be reviewed and administratively approved by Westinghouse.

7 QUALITY ASSURANCE

In accordance with the host utility's NRC accepted QA program [Ref. 7-1], the utility contractually requires PNNL and Westinghouse to establish, maintain and implement a Quality Assurance program that meets the requirements of 10 CFR 50, Appendix B.^[1]

PNNL designs and fabricates TPBARs that meet or exceed established requirements in accordance with the PNNL Project Quality Assurance Plan. The PNNL Project Quality Assurance Plan establishes a systematic, disciplined, and uniform approach for activities affecting quality and provides a high degree of assurance against failure or malfunction, and without undue risk to the health and safety of the public.^[2]

The host utility has determined that the TPBARs in the LTAs do not perform a safety function consistent with the definitions in their docketed QA program [Ref. 7-1]. However, consistent with 10 CFR Part 21, the design and fabrication of TPBARs are accomplished under a PNNL quality assurance program that complies with the requirements of 10 CFR 50, Appendix B. The individual subcomponents of TPBARs will have the appropriate quality assurance and 10 CFR Part 21 requirements applied to an extent commensurate with their importance to safety and consistent with provisions of 10 CFR 50, Appendix B, Criterion II, Quality Assurance Program.^[3]

Westinghouse is the fuel system supplier for the potential host reactors. As a service to the host utility, Westinghouse will qualify PNNL as an approved supplier for the design and fabrication of lead test assemblies in accordance with the NRC approved Westinghouse Quality Management System (QMS) [Refs. 7-2 and 7-3]. This qualification includes evaluation of the PNNL Project Quality Assurance Plan and its implementation for compliance with 10 CFR 50, Appendix B, ASME NQA-1 Basic and Supplementary Requirements [Ref. 7-4] as delineated in the Westinghouse QMS.^[4]

Table 7-1 describes the responsibilities for quality activities and Figure 7-1 illustrates the quality assurance interfaces.

Table 7-1 CLWR Lead Test Assembly Program Responsibilities

PARTY	RESPONSIBILITY
PNNL Project Management	Establish and manage contract(s) for LTA irradiation.
	Establish and maintain a Quality Assurance Plan that meets the requirements of 10 CFR 50, Appendix B. ^[5]
PNNL QA ^[6]	Conduct management assessments and QA audits of PNNL activities.
	Conduct QA audit/oversight of component and service suppliers.
PNNL Design	Design LTA and perform design analyses.
	Procure services as necessary to support design and analysis.
PNNL Fabrication	Fabricate TPBARs.
	Procure components and services to support fabrication.
HOST UTILITY(IES)	Identify applicable facility technical and quality requirements of PNNL.
	Conduct required safety reviews prior to irradiation, including Reload Safety Evaluation.
	Conduct QA oversight of PNNL, Westinghouse and sub-suppliers to evaluate compliance with facility QA Program.
	Conduct irradiation in accordance with facility operating license.

Table 7-1 CLWR Lead Test Assembly Program Responsibilities

PARTY	RESPONSIBILITY
WESTINGHOUSE	Identify applicable Westinghouse technical and quality requirements to PNNL. (Identify fuel assembly interface parameters and conditions.) ^[7]
	Support PNNL by making code modifications and providing analysis results (under contract directly with PNNL).
	Assemble TPBARs with hold-down assemblies into LTAs.
	Conduct core design and reload evaluation for the host utility.
	Qualify PNNL as an approved supplier for the LTA design and fabrication.
	Conduct QA oversight of PNNL and sub-suppliers in accordance with Westinghouse QA Program requirements for fuel assembly components and host utility requirements. ^[8]
COMPONENT / SERVICE SUPPLIERS	Meet QA requirements for supplying components or services as specified in contracts.

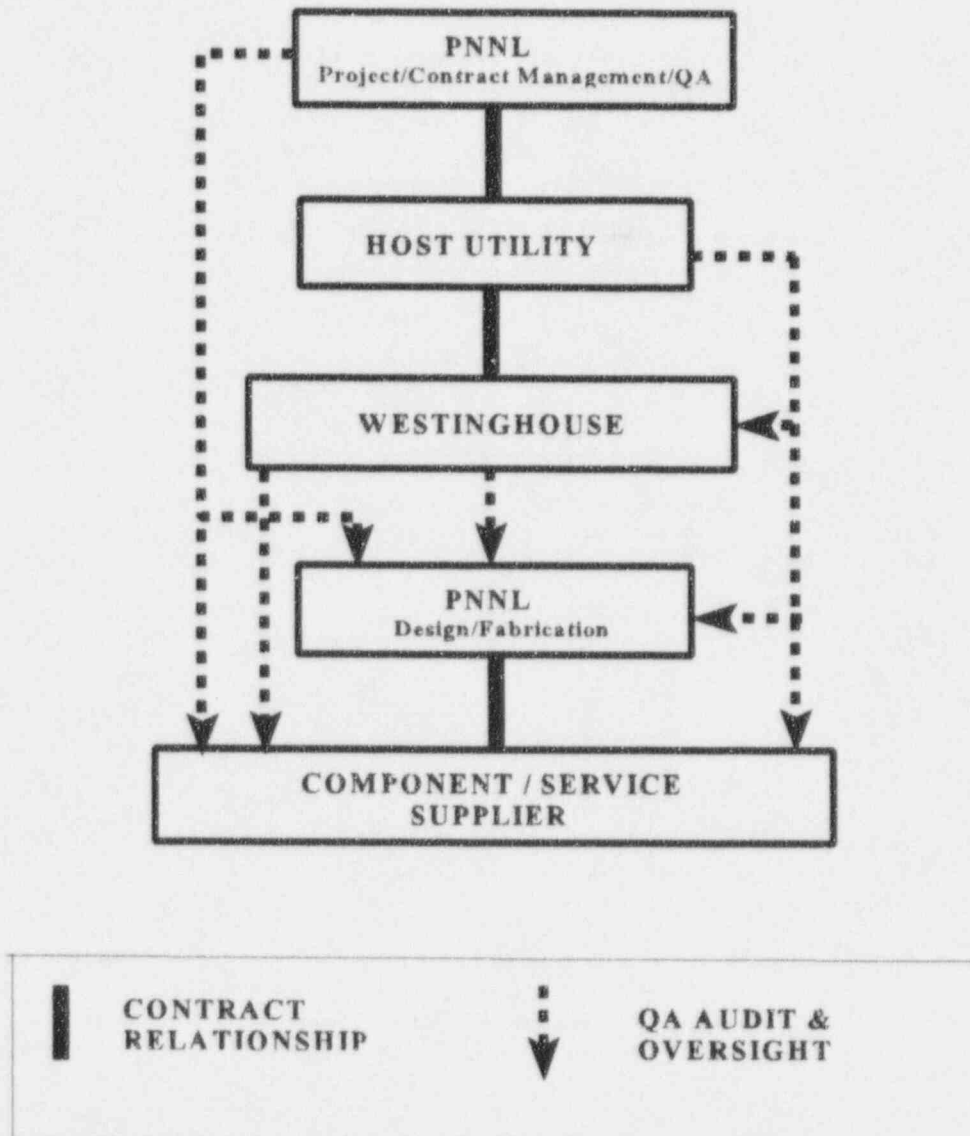


Figure 7-1 Quality Assurance Interfaces

7.1 References

- 7-1. TVA-NQA-PLN89-A, Tennessee Valley Authority's Nuclear Quality Assurance Plan accepted by NRC under Docket Nos. 390/391.^[9]
- 7-2. Westinghouse. 1996. "Quality Management System," Revision 1. Westinghouse Electric Corporation, Pittsburgh, PA.^[10]
- 7-3. NRC letter from Quality Assurance and Maintenance Branch, Division of Reactor Controls and Human factors, Office of Nuclear Reactor Regulation, to Westinghouse, dated February 23, 1996. Docket No. 99900900.^[11]
- 7-4. ASME. 1994. ANSI/ASME NQA-1 (1994), "Quality Assurance Program Requirements for Nuclear Facility Applications." American Society of Mechanical Engineers, New York, New York.^[12]

CHANGE DESCRIPTIONS:

- [1] Editorial, clarification; added introductory paragraph to clearly indicate that the utility QA program is the top level set of requirements for QA.
- [2] Editorial, clarification; revised paragraph to improve clarity and indicate that the PNNL Project QA Plan is the framework for work at PNNL.
- [3] Response to QA RAIs 1, 2, and part of 4; added discussion regarding classification of TPBAR LTA components and applicability of 10 CFR Part 21.
- [4] Editorial, response to QA RAI 14; revised the paragraph to clarify Westinghouse involvement and to indicate the program used by Westinghouse in their qualification of PNNL as an approved supplier.
- [5] Editorial clarification; replaced NQA-1 with 10 CFR 50, Appendix B to accurately reflect the host utility quality requirements.
- [6] Editorial; Removed Regulatory Compliance and preparation of the topical report from Table 7-1 since these are not part of the QA responsibilities. Also revised Figure 7-1 to clarify that PNNL QA provides oversight of PNNL design and fabrication activities, as well as oversight of component and service suppliers (figure previously did not identify PNNL QA and implied that supplier oversight was done by design and fabrication personnel). Figure 7-1 was also revised to remove the solid line (contract relationship) between PNNL Project/Contract Management and Westinghouse since that relationship is minor.
- [7] Editorial, clarification; clarified that Westinghouse technical requirements include fuel assembly interface parameters and conditions.
- [8] Editorial; replaced "to ensure compliance" with "in accordance" and added "host utility requirements."
- [9] Editorial; added reference to TVA QA Program to reflect host licensee.
- [10] Editorial; added reference citation to the Westinghouse QMS.
- [11] Editorial; added reference listing for the approval of the Westinghouse QMS.
- [12] Correction; Revised version of NQA-1 referenced to reflect that Westinghouse audit and evaluation was based upon NQA-1, 1994, vice the 1989 version upon which the PNNL QA Program is based.