PMBeICOL PEmails

From: Spink, Thomas E [tespink@tva.gov]
Sent: Wednesday, August 20, 2008 9:33 AM
To: Ravindra Joshi
Cc: Sterdis, Andrea Lynn; erg-xl@cox.net
Subject: Courtesy email copy of TVA's Response to RAI Letters 66 and 75
Attachments: BLN RAI Response to RAI Letter 066 for Final 20080815.pdf; BLN RAI Response to RAI Letter 074 final for Signature 20080819.pdf

Ravi,

I have enclosed a pdf copy of our response to RAI Letters 066 and 074 with this email as a courtesy. As always, the official submittal has been submitted to the Document Control Desk via paper copy using Federal Express services. The paper copy should arrive on August 20, 2008.

If you have any questions, please do not hesitate to call me.

Thomas E. Spink
Licensing Project Manager
Nuclear Generation Development
1101 Market Street, LP 5A
Chattanooga, TN 37402
423-751-7062 Fax: (423)-751-6509

Hearing Identifier: Bellefonte_COL_Public_EX
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Recipients Received:

Tennessee Valley Authority, 1101 Market Street, LP 5A, Chattanooga, Tennessee 37402-2801

August 19, 2008

10 CFR 52.79

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

In the Matter of)
Tennessee Valley Authority)

Docket No. 52-014 and 52-015

BELLEFONTE COMBINED LICENSE APPLICATION – RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION – REGULATORY GUIDE CONFORMANCE

Reference: Letter from Ravindra G. Joshi (NRC) to Andrea L. Sterdis (TVA), Request for Additional Information Letter No. 066 Related to SRP Section 01 for the Bellefonte Units 3 and 4 Combined License Application, dated July 7, 2008

This letter provides the Tennessee Valley Authority's (TVA) responses to the Nuclear Regulatory Commission's (NRC) request for additional information (RAI) items included in the reference letter.

A response to the NRC request in the subject letter is addressed in the enclosure which also identifies associated changes that will be made in a future revision of the BLN application.

If you should have any questions, please contact Thomas Spink at 1101 Market Street, LP5A, Chattanooga, Tennessee 37402-2801, by telephone at (423) 751-7062, or via email at tespink@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 19th day of Aug, 2008.

Andrea L. Sterdis
Manager, New Nuclear Licensing and Industry Affairs
Nuclear Generation Development & Construction

Enclosure
cc: See Page 2

cc: (w/Enclosure)
J. P. Berger, EDF
E. Cummins, Westinghouse
S. P. Frantz, Morgan Lewis
M. W. Gettler, FP&L
R. C. Grumbir, NuStart
P. S. Hastings, NuStart
P. Hinnenkamp, Entergy
R. G. Joshi, NRC/HQ
M. C. Kray, NuStart
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C. R. Pierce, SNC
R. Reister, DOE/PM
L. Reyes, NRC/RII
T. Simms, NRC/HQ
K. N. Slays, NuStart
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Enclosure
TVA letter dated August 19, 2008
RAI Response

Response to NRC Request for Additional Information letter No. 066 dated July 7, 2008
(10 pages, including this list)

Subject: Regulatory Guide Conformance in the Final Safety Analysis Report

RAI Number	Date of TVA Response
01-05	This letter – see following pages

Associated Additional Attachments / Enclosures	Pages Included
None	

NRC Letter Dated: July 7, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 01-05

Westinghouse DCD Appendix 1A provides an evaluation of the degree of AP1000 compliance with NRC Division 1 Regulatory Guides. Westinghouse DCD Table 1.9-1 identifies the appropriate DCD cross reference for those regulatory guides applicable to AP1000.

Bellefonte FSAR Section 1.9.1.1, "Division 1 Regulatory Guides-Power Reactors", states in part, "Appendix 1AA provides an evaluation of the degree of compliance with Division 1 regulatory guides as applicable to content of this FSAR, or to the site-specific design, construction and/or operational aspects." Section 1.9.1.1 also states that Table 1.9-201 identifies the appropriate regulatory guide to FSAR cross-reference and the cross-referenced sections contain descriptive information applicable to the regulatory guide positions found in Appendix 1AA. Bellefonte Appendix 1AA supplements the information in DCD Appendix 1A.

Based on the above, for Bellefonte, compliance with Regulatory Guides consists of Westinghouse DCD Appendix 1A and Bellefonte Section 1.9.1.1 and Appendix 1AA.

The result of our review of the above documents is provided below:

1. Appendix 1AA lists the later version of the Regulatory Guides when compared with the DCD Table 1.9-1 {e.g., Reg. Guide 1.7, 1.13, 1.20, 1.26, 1.29, 1.97 (Table 1.9-201 lists Revision 4 for Regulatory Guide 1,97 and cross references to Appendix 12AA of the FSAR (NEI-07-03). NEI-07-03 in Section 12.5.3 states in part that the types and characteristic of instrumentation are consistent with guidance in Regulatory Guide 1.97. NEI-07-03 references Revision 4 of Regulatory Guide 1.97 but Appendix 1AA discusses Rev. 3)} but does not discuss compliance with the later version. Instead, a statement is provided to indicate that conformance with the earlier revision is documented in the DCD. There is no explanation or justification in Appendix 1AA to indicate why the latest version of the Regulatory Guide is not applicable or not within the scope of the COLA. Please clarify the apparent discrepancy between compliance discussions for different revisions of Regulatory Guides.
2. Bellefonte FSAR Section 1.9.1.1 states in part that any exceptions or alternatives to the provisions of the regulatory guides are identified and justification is provided (reference Appendix 1AA). However, for certain Regulatory Guides exception is provided but not justified. (e. g., R.G. 1.21, Position C.6, provides an exception and states that ANSI N13.1-199 is used. Provide a justification why the specific ANSI standard is an alternative method to meet the specific regulatory Position 0 (other examples are R.G. 1.152, R. G. 8.6).

Please note that additional questions may be forthcoming relevant to the technical and/or regulatory adequacy of this part of the application as the technical staff completes its reviews in the various chapters.

BLN RAI ID: 0629

BLN RESPONSE:

1. As indicated in the question, the FSAR Appendix 1AA lists the later version of the Regulatory Guides when compared with the DCD Table 1.9-1 but (in some cases) does not discuss compliance with the later version. In the cases where the later version is not discussed, the intent was that the later revision was not considered relevant because the specific Regulatory Guide was considered to be only design related information which was completely addressed in the DCD, thus the statement that

"conformance with the earlier revision is documented in the DCD" was intended to fully address the guidance. However, an additional statement that specifically addresses the later revision of the Regulatory Guide in Appendix 1AA would provide further clarification. Thus, FSAR Subsection 1.9.1.1 and FSAR Appendix 1AA will be revised to provide this additional clarification as shown in the Application Revisions section below. In addition, each Regulatory Guide was reviewed to determine if any programmatic and/or operational aspects may have been overlooked. FSAR Appendix 1AA will also be revised to provide positions on any programmatic and/or operational aspects identified by this review.

2. As indicated the FSAR Appendix 1AA, for certain Regulatory Guides exception is provided but not justified. The Regulatory Guides with exceptions have been reviewed and justification is provided for each where it might have been missing (as shown in the Application Revisions section below).

Associated conforming changes to FSAR Table 1.9-201 will be addressed in the response to NRC RAI Number 01-07.

This response is expected to be STANDARD for the S-COLAs.

ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 2, FSAR, Chapter 1, Subsection 1.9.1.1 will be revised to supplement the third sentence from:

Any exceptions or alternatives to the provisions of the regulatory guides are identified and justification is provided.

To read:

Any exceptions or alternatives to the provisions of the regulatory guides are identified and justification is provided. One such general alternative is the use of previous revisions of the Regulatory Guide for design aspects as stated in the DCD in order to preserve the finality of the certified design. Stated conformance with the programmatic and/or operational aspects is only to the extent that a design change or departure from the approved DCD is not required to implement those programmatic and/or operational aspects.

2. COLA Part 2, FSAR, Chapter 1, Subsection 1.9.1.2 will be revised to supplement the fourth sentence from:

Any exceptions or alternatives to the provisions of the regulatory guides are identified and justification is provided.

To read:

Any exceptions or alternatives to the provisions of the regulatory guides are identified and justification is provided. One such general alternative is the use of previous revisions of the Regulatory Guide for design aspects as stated in the DCD in order to preserve the finality of the certified design. Stated conformance with the programmatic and/or operational aspects is only to the extent that a design change or departure from the approved DCD is not required to implement those programmatic and/or operational aspects.

3. COLA Part 2, FSAR, Chapter 1, Subsection 1.9.1.3 will be revised to supplement the fourth sentence from:

Any exceptions or alternatives to the provisions of the regulatory guides are identified and justification is provided.

To read:

Any exceptions or alternatives to the provisions of the regulatory guides are identified and justification is provided. One such general alternative is the use of previous revisions of the Regulatory Guide for design aspects as stated in the DCD in order to preserve the finality of the certified design. Stated conformance with the programmatic and/or operational aspects is only to the extent that a design change or departure from the approved DCD is not required to implement those programmatic and/or operational aspects.

4. COLA Part 2, FSAR, Chapter 1, Subsection 1.9.1.4 will be revised to supplement the third sentence from:

Any exceptions or alternatives to the provisions of the regulatory guides are identified and justification is provided.

To read:

Any exceptions or alternatives to the provisions of the regulatory guides are identified and justification is provided. One such general alternative is the use of previous revisions of the Regulatory Guide for design aspects as stated in the DCD in order to preserve the finality of the certified design. Stated conformance with the programmatic and/or operational aspects is only to the extent that a design change or departure from the approved DCD is not required to implement those programmatic and/or operational aspects.

5. COLA Part 2, FSAR, Chapter 1, Appendix 1AA will be revised to remove the conformance statement for Regulatory Guide 1.161 Rev. 0. As indicated in the DCD, this guidance is not applicable to the AP1000 design and the following will be deleted.

Regulatory Guide 1.161, Rev. 0, 6/95 – Evaluation of Reactor Pressure Vessels with Charpy Upper-Shelf Energy Less Than 50 Ft-Lb.

Conformance with the design aspects is as stated in the DCD. Conformance with Revision 0 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

General	Conforms

6. COLA Part 2, FSAR, Chapter 1, Appendix 1AA will be revised from the current wording to include the new or revised Regulatory Guide conformance statements shown below (Note that this listing is not a complete replacement of Appendix 1AA and that some previously identified errata items have also been incorporated.):

Regulatory Guide 1.7, Rev. 3, 3/07 – Control of Combustible Gas Concentrations in Containment

Conformance of the design aspects with Revision 2 of the Regulatory Guide is as stated in the DCD. Conformance with Revision 3 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

C.2	Conforms
C.4	Conforms

Regulatory Guide 1.12, Rev. 2, 3/97 – Nuclear Power Plant Instrumentation for Earthquakes

Conformance of the design aspects is as stated in the DCD. Conformance for programmatic and/or operational aspects is documented below.

C.3	Conforms
C.8	Conforms

Regulatory Guide 1.13, Rev. 2, 3/07 – Spent Fuel Storage Facility Design Basis

Conformance of the design aspects with Revision 1 of the Regulatory Guide is as stated in the DCD. Conformance with Revision 2 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

C.7	Conforms

Regulatory Guide 1.20, Rev. 3, 3/07 – Comprehensive Vibration Assessment Program For Reactor Internals During Preoperational and Initial Startup Testing

Conformance with Revision 2 of this Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.26, Rev. 4, 3/07 – Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants

Conformance with Revision 3 of this Regulatory Guide for DCD scope of work is as stated in the DCD. Conformance with Revision 4 of this Regulatory Guide for remaining scope is documented below.

General	Conforms

Regulatory Guide 1.28, Rev. 3, 8/85 – Quality Assurance Program Requirements (Design and Construction)

Conformance for DCD scope of work is as stated in the DCD. Conformance for remaining scope is documented below.

General	Exception	Quality assurance requirements utilize the more recently NRC endorsed NQA-1 in lieu of the identified outdated standards.

Regulatory Guide 1.29, Rev. 4, 3/07 – Seismic Design Classification

Conformance with Revision 3 of this Regulatory Guide for DCD scope of work is as stated in the DCD. Conformance with Revision 4 of this Regulatory Guide for remaining scope is documented below.

C.4	Conforms

Regulatory Guide 1.30, Rev. 0, 8/72 – Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment

Conformance for DCD scope of work is as stated in the DCD. Conformance for remaining scope is documented below.

General	Exception	Quality assurance requirements utilize the more recently NRC endorsed NQA-1 in lieu of the identified outdated standards.

Regulatory Guide 1.32, Rev. 3, 3/04 – Criteria for Power Systems for Nuclear Power Plants

Conformance of the design aspects with Revision 2 of the Regulatory Guide is as stated in the DCD. Conformance with Revision 3 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

General	Conforms	

Regulatory Guide 1.33, Rev. 2, 2/78 – Quality Assurance Program Requirements (Operation)

General	Exception	Quality assurance requirements utilize the more recently NRC endorsed NQA-1 in lieu of the identified outdated standards.

Regulatory Guide 1.37, Rev. 1, 3/07 – Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water Cooled Nuclear Power Plants

Conformance of the design aspects with Revision 0 of the Regulatory Guide is as stated in the DCD. Conformance with Revision 1 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

General	Conforms	

Regulatory Guide 1.38, Rev. 2, 5/77 – Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water-Cooled Nuclear Power Plants

Conformance for DCD scope of work is as stated in the DCD. Conformance for remaining scope is documented below.

General	Exception	Quality assurance requirements utilize the more recently NRC endorsed NQA-1 in lieu of the identified outdated standards.

Regulatory Guide 1.39, Rev. 2, 9/77 – Housekeeping Requirements for Water-Cooled Nuclear Power Plants

Conformance for DCD scope of work is as stated in the DCD. Conformance for remaining scope is documented below.

General	Exception	Quality assurance requirements utilize the more recently NRC endorsed NQA-1 in lieu of the identified outdated standards.

Regulatory Guide 1.45, Rev. 0, 5/73 - Reactor Coolant Pressure Boundary Leakage Detection Systems

Conformance of the design aspects is as stated in the DCD. Conformance with programmatic and/or operational aspects is documented below.

C.7	Conforms	

Regulatory Guide 1.53, Rev. 2, 11/03 - Application of the Single-Failure Criterion to Nuclear Power Plant Protection Systems

Conformance of the design aspects with Revision 0 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.54, Rev. 1, 7/00 – Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants

Conformance of the design aspects is as stated in the DCD. Conformance with programmatic and/or operational aspects is documented below.

General	Conforms	

Regulatory Guide 1.57, Rev. 1, 3/07 – Design Limits and Loading Combinations for Metal Primary Reactor Containment System Components

Conformance with Revision 0 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.61, Rev. 1, 3/07 – Damping Values for Seismic Design of Nuclear Power Plants

Conformance with Revision 0 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.65, Rev. 0, 10/73 - Materials and Inspections for Reactor Vessel Closure Studs

Conformance of the design aspects is as stated in the DCD. Conformance with programmatic and/or operational aspects is documented below.

C.3	Conforms	
C.4	Exception	ASME XI ISI criteria for reactor vessel closure stud examinations are applied in lieu of the ASME III NB-2545 and NB-2546 surface examinations. The volumetric examinations currently required by ASME XI provide improved (since 1973) detection of bolting degradation.

Regulatory Guide 1.71, Rev. 1, 3/07 – Welder Qualification for Areas of Limited Accessibility

Conformance of the design aspects with Revision 0 of the Regulatory Guide is as stated in the DCD. Conformance with Revision 1 of the Regulatory Guide during the operational phase (i.e., after the construction phase is completed per the DCD) is documented below.

General	Conforms

Regulatory Guide 1.75, Rev. 3, 2/05 – Criteria for Independence of Electric Safety Systems

Conformance with Revision 2 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.76, Rev. 1, 3/07 – Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants

Conformance with Revision 0 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.78, Rev. 1, 12/01 – Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release

Conformance with the design aspects is as stated in the DCD. Conformance with programmatic and/or operational aspects is documented below.

General	Conforms

Regulatory Guide 1.82, Rev. 3, 11/03 – Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident

Conformance of the design aspects with Revision 2 of this Regulatory Guide is as stated in the DCD. Conformance with Revision 3 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

C.1.1.2	Conforms
C.1.1.5	Conforms

Regulatory Guide 1.83, Rev. 1, 7/75 – Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes

Conformance of the design aspects is as stated in the DCD. Conformance of the programmatic and/or operational aspects is documented below.

General	Exception	Steam generator tube surveillance is in accordance with Nuclear Energy Institute (NEI) 97-06. This guidance has been endorsed by NRC as an acceptable program basis.

Regulatory Guide 1.84, Rev. 33, 8/05 – Design, Fabrication, and Materials Code Case Acceptability, ASME Section III

Conformance with Revision 31 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.92, Rev. 2, 7/06 – Combining Modal Responses and Spatial Components in Seismic Response Analysis

Conformance with Revision 1 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.94, Rev. 1, 4/76 – Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants

Conformance for DCD scope of work is as stated in the DCD. Conformance for remaining scope is documented below.

General	Exception	Quality assurance requirements utilize the more recently NRC endorsed NQA-1 in lieu of the identified outdated standards.

Regulatory Guide 1.97, Rev. 4, 6/06 – Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants

Conformance with Revision 3 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.112, Rev. 1, 3/07 – Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Light-Water-Cooled Power Reactors

Conformance of the design aspects with Revision 0-R of the Regulatory Guide is as stated in the DCD. Conformance with Revision 1 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

General	ANSI 18.1-1999	Conforms

Regulatory Guide 1.116, Rev. 0-R, 5/77 – Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems

Conformance for DCD scope of work is as stated in the DCD. Conformance for remaining scope is documented below.

General	Exception	Quality assurance requirements utilize the more recently NRC endorsed NQA-1 in lieu of the identified outdated standards.

Regulatory Guide 1.124, Rev. 2, 2/07 – Service Limits and Loading Combinations for Class 1 Linear-Type Supports

Conformance with Revision 1 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.128, Rev. 2, 2/07 – Installation Design and Installation of Vented Lead-Acid Storage Batteries for Nuclear Power Plants

Conformance with Revision 1 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.130, Rev. 2, 3/07 – Service Limits and Loading Combinations for Class 1 Plate-And-Shell-Type Supports

Conformance with Revision 1 of the Regulatory Guide is as stated in the DCD. This guidance is completely within the scope of the DCD.

Regulatory Guide 1.139, Rev. 0, 5/78 – Guidance for Residual Heat Removal

Conformance with the design aspects is as stated in the DCD. The programmatic and/or operational aspects are not applicable since this guidance was withdrawn by NRC (73 FR 32750, 06/10/2008).

Regulatory Guide 1.150, Rev. 1, 2/83 – Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations

Conformance with the design aspects is as stated in the DCD. The programmatic and/or operational aspects are not applicable since this guidance was withdrawn by NRC (73 FR 7766, 02/11/2008).

Regulatory Guide 1.152, Rev. 2, 1/06 – Criteria for Use of Computers in Safety Systems of Nuclear Power Plants

Conformance of the design aspects with Revision 1 of the Regulatory Guide is as stated in the DCD. Conformance with Revision 2 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

General	Exception	The Cyber Security Program is based on NEI 04-04 Revision 1 which has been identified by the NRC as an acceptable means for development of the program.

Regulatory Guide 1.168, Rev. 1, 2/04 – Verification, Validation, Reviews, and Audits for Digital Computer Software Used in Safety Systems of Nuclear Power Plants

Conformance of the design aspects with Revision 0 of the Regulatory Guide is as stated in the DCD. Conformance with Revision 1 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

General	Conforms

Regulatory Guide 1.174, Rev. 1, 11/02 – An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis

This Regulatory Guide is outside the scope of the FSAR.

Regulatory Guide 1.175, Rev. 0, 8/98 – An Approach for Plant-Specific, Risk-Informed Decisionmaking: Inservice Testing

Risk-informed inservice testing is not being utilized for this plant.

Regulatory Guide 1.178, Rev. 1, 9/03 – An Approach for Plant-Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping

Risk-informed inservice inspection is not being utilized for this plant.

Regulatory Guide 1.180, Rev. 1, 10/03 – Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems

Conformance of the design aspects with Revision 0 of the Regulatory Guide is as stated in the DCD. Conformance with Revision 1 of this Regulatory Guide for programmatic and/or operational aspects is documented below.

General	Conforms	Exclusion zones are established through administrative controls to prohibit the activation of portable EMI/RFI emitters (e.g., welders and transceivers) in areas where safety-related I&C systems are installed.

Regulatory Guide 1.197, Rev. 0, 5/03 – Demonstrating Control Room Envelope Integrity as Nuclear Power Reactors

Conformance with the design aspects is as stated in the DCD. Conformance with programmatic and/or operational aspects is documented below.

General	Conforms

7. COLA Part 2, FSAR, Chapter 1, Appendix 1AA will be revised to include the following new note:

Note – Above stated general alternatives regarding the use of previous revisions of the Regulatory Guide for design aspects as stated in the DCD is provided to preserve the finality of the certified design. Further, each stated conformance with the programmatic and/or operational aspects is only to the extent that a design change or departure from the approved DCD is not required to implement those programmatic and/or operational aspects.

ATTACHMENTS/ENCLOSURES:

None

Tennessee Valley Authority, 1101 Market Street, LP 5A, Chattanooga, Tennessee 37402-2801

August 19, 2008

10 CFR 52.79

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

In the Matter of)
Tennessee Valley Authority)

Docket No. 52-014 and 52-015

BELLEFONTE COMBINED LICENSE APPLICATION – RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION – REACTOR VESSEL HEAD INSPECTIONS

Reference: Letter from Ravindra G. Joshi (NRC) to Andrea L. Sterdis (TVA), Request for Additional Information Letter No. 074 Related to SRP Section 05.02.04 for the Bellefonte Units 3 and 4 Combined License Application, dated July 16, 2008

This letter provides the Tennessee Valley Authority's (TVA) response to the Nuclear Regulatory Commission's (NRC) request for additional information (RAI) item included in the reference letter.

A response to the NRC request in the subject letter is addressed in the enclosure which also identifies any associated changes that will be made in a future revision of the BLN application.

If you should have any questions, please contact Thomas Spink at 1101 Market Street, LP5A, Chattanooga, Tennessee 37402-2801, by telephone at (423) 751-7062, or via email at tespink@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 19th day of Aug, 2008.

Andrea L. Sterdis
Manager, New Nuclear Licensing and Industry Affairs
Nuclear Generation Development & Construction

Enclosure
cc: See Page 2

cc: (w/Enclosure)
J. P. Berger, EDF
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R. H Kitchen, PGN
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A. . Monroe, SCE&G
C. R. Pierce, SNC
R. Reister, DOE/PM
L. Reyes, NRC/RII
T. Simms, NRC/HQ
K. N. Slays, NuStart
J. M. Sebrosky, NRC/HQ

Enclosure
TVA letter dated August 19, 2008
RAI Response

Responses to NRC Request for Additional Information letter No. 074 dated July 16, 2008
(3 pages, including this list)

Subject: Reactor vessel head inspections in the Final Safety Analysis Report

RAI Number	Date of TVA Response
05.02.04-05	This letter – see following pages

Associated Additional Attachments / Enclosures	Pages Included
Attachment 05.02.04-05A	1 page

NRC Letter Dated: July 16, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 05.02.04-05

The supplemental information STD COL 5.2-2 added at the end of DCD Subsection 5.2.4.1 discusses Order EA-03-009 and ASME Code Case N-729-1, as amended by the NRC staff, as guidance to the system boundary subject to inspection of the reactor vessel head. Due to CRDM J-Groove weld cracking, the staff believes it is important that the most recent inspection guidance be applied during operation. The current NRC position applicable to inspection guidance for the reactor vessel is presented in the proposed amendments to 10 CFR 50.55a(g)(6)(ii)(D) related to reactor vessel head inspections (72 FR 16740). Discuss TVA's plans for augmenting its inservice inspection program for the reactor vessel top head by implementing ASME Code Case N-729-1 as amended.

BLN RAI ID: 0753

BLN RESPONSE:

ASME Code Case N-729-1, as amended by the proposed revision to 10 CFR 50.55a(g)(6)(ii)(D) related to reactor vessel head inspections (72 FR 16740), will be utilized to augment the inservice inspection program for the reactor vessel top head. FSAR Subsection 5.2.4.1 will be revised as shown in the Application Revisions section below to reflect this program augmentation. Attachment 05.02.04-05A shows the current wording of the proposed revision to 10 CFR 50.55a(g)(6)(ii)(D) related to reactor vessel head inspections (72 FR 16740). Note that the final wording of the revised rule will be adopted for this inspection augmentation once the rulemaking is complete.

This response is expected to be STANDARD for the S-COLAs.

ASSOCIATED BLN COL APPLICATION REVISIONS:

COLA Part 2, FSAR. Chapter 5, Section 5.2.4.1, fifth paragraph, will be revised from:

NRC First Revised Order EA-03-009, "Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," established required inspections of reactor pressure vessel heads and associated penetration nozzles at PWRs in response to primary water stress corrosion cracking. A calculation to determine the susceptibility of the reactor pressure vessel head to primary water stress corrosion cracking is completed for the end of each operating cycle. The calculated value and previous inspection findings are used to determine the appropriate susceptibility category and the associated inspection criteria and inspection frequency for the reactor pressure vessel head and penetration nozzles during each refueling outage. ASME Code Case N-729-1, "Alternative Examination Requirements for Pressurized-Water Reactor (PWR) Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds, " provides alternative examination requirements in lieu of the requirements in the order. ASME Code Case N-729-1 as modified by the NRC Staff Position on the use of ASME Code Case N-729-1 may be used to perform the inspection the AP1000 reactor pressure vessel head. The staff position on this code case is included as an attachment to NRC letter from John A. Globe, NRC to James H. Riley, NEI dated August 9, 2006. A report is submitted to the NRC detailing the inspection results within 60 days after returning the plant to operation. In addition to the required inspections resulting from the susceptibility category, a visual inspection to identify

potential boric acid leaks from pressure-retaining components above the reactor pressure vessel head is performed each refueling outage.

To read:

The inservice inspection program is augmented for reactor vessel top head inspections by use of the ASME Code Case N-729-1, “Alternative Examination Requirements for Pressurized-Water Reactor (PWR) Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds,” as modified by the NRC Staff position on the use of ASME Code Case N-729-1 shown in the proposed rulemaking dated April 5, 2007 (72 FR 16740).

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 05.02.04-05A

Attachment 05.02.04-05A

72 CFR 16740 (April 5, 2007) proposed wording re Reactor Vessel Head Inspections

Proposed amendment to 10 CFR 50.55a(g)(6)(ii)(D)

(D) *Reactor Vessel Head Inspections.*

(*1*) All licensees of pressurized water reactors shall augment their inservice inspection program by implementing ASME Code Case N–729–1 subject to the conditions specified in paragraphs (g)(6)(ii)(D)(*2*) through (*6*) of this section.

(*2*) Item B4.40 of Table 1 must be inspected at least every fourth refueling outage or at least every seven calendar years, whichever occurs first, after the first ten-year inspection interval.

(*3*) Instead of fulfilling the specified 'examination method' requirements for volumetric and surface examinations of Note 6 in Table 1, the licensee shall perform a volumetric or surface examination or both of essentially 100 percent of the required volume or equivalent surfaces of the nozzle tube, as identified by Fig. 2 of ASME Code Case N–729–1. A surface examination must be performed on all J-groove welds. If a surface examination is substituted for a volumetric examination on a portion of a penetration nozzle that is below the toe of the J-groove weld (Point E on Fig. 2 of ASME Code Case N–729–1), the surface examination must be of the inside and outside wetted surfaces of the penetration nozzle not examined volumetrically.

(*4*) Ultrasonic examinations must be performed using personnel, procedures and equipment that have been qualified by blind demonstration on representative mockups using a methodology that meets the conditions specified in paragraphs (g)(6)(ii)(D)(4)(*i*) through (*iv*) of this section instead of using a methodology that satisfies the conditions specified by the qualification requirements of Paragraph–2500 of ASME Code Case N–729–1.

(*i*) The diameters of pipes in the specimen set shall be within 1⁄2 in. (13 mm) of the nominal diameter of the qualification pipe size and a thickness tolerance of ± 25 percent of the nominal through-wall depth of the qualification pipe thickness. The specimen set must contain geometric and material indications that normally require discrimination from primary water stress corrosion cracking (PWSCC) flaws.

(*ii*) The specimen set must have a minimum of ten (10) flaws that provide an acoustic response similar to that of PWSCC indications. All flaw depths in the specimen set must be greater than 10 percent of the nominal pipe wall thickness. A minimum number of 30 percent of the total flaws must be connected to the outside diameter and 30 percent of the total flaws must be connected to the inside diameter. Further, at least 30 percent of the total flaws must measure from a depth of 10 to 30 percent of the wall thickness and at least 30 percent of the total flaws must measure from a depth of 31 to 50 percent of the wall thickness and be connected to the inside or outside diameter, as applicable. At least 30 percent, but no more than 60 percent, of the flaws must be oriented axially.

(*iii*) The procedures must identify the equipment and essential variable settings used to qualify the procedures. An essential variable is defined as any variable that affects the results of the examination. The procedure must be requalified when an essential variable is changed to fall outside the demonstration range. A procedure must be qualified using the equivalent of at least three test sets that are used to demonstrate personnel performance. Procedure qualification must require at least one successful personnel performance demonstration.

(*iv*) The test acceptance criteria for a personnel performance demonstration must meet the detection test acceptance criteria for personnel performance demonstration in Table VIII–S10–1 of Section XI, Appendix VIII, Supplement 10. Examination procedures, equipment, and personnel must be considered qualified for depth sizing only if the root mean square (RMS) error of the flaw depth measurements, as compared to the true flaw depths, does not exceed 1/32-inch (0.8 mm). Examination procedures, equipment, and personnel must be considered qualified for length sizing if the RMS error of the flaw length measurements, as compared to the true flaw lengths, does not exceed 1/16-inch (1.6 mm).

(*5*) If flaws attributed to PWSCC have been identified, whether acceptable or not for continued service under Paragraphs -3130 or -3140 of ASME Code Case N–729–1, the reinspection interval must be each refueling outage instead of the reinspection intervals required by Table 1, Note (8) of ASME Code Case N–729–1.

(*6*) Appendix I of ASME Code Case N–729–1 must not be implemented without prior NRC approval.