PMBelCOL NPEmails

From: Ryan, William T III [wtryan@tva.gov]
Sent: Tuesday, October 27, 2009 5:05 PM
To: Sebrosky, Joseph
Cc: Eddie.Grant@EXCELServices.com; Sterdis, Andrea Lynn; Spink, Thomas E
Subject: Courtesy Copy of BLN RAI Response to RAI Letter 160 S1 (10-27-09)
Attachments: BLN RAI Response to RAI Letter 160 supp 1 rev 1 10 27 09 signed.pdf

I have enclosed a PDF copy of our Response to RAI Letter 160 Supplement 1 with this email as a courtesy. This copy only contains the main body of the letter and the attachment cover sheets due to the size of the original document. 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 October 28, 2009.

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

Tom Ryan
w(423)751-2596
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Hearing Identifier: Bellefonte_COL_NonPublic_EX
Email Number: 3667

Mail Envelope Properties (BB92FFE197756B4880158C9914E2DE8E0A3DDB83)

Subject: Courtesy Copy of BLN RAI Response to RAI Letter 160 S1 (10-27-09)
Sent Date: 10/27/2009 5:04:45 PM
Received Date: 10/27/2009 5:05:38 PM
From: Ryan, William T III

Created By: wtryan@tva.gov

Recipients:
"Eddie.Grant@EXCELServices.com" <Eddie.Grant@EXCELServices.com>
Tracking Status: None
"Sterdis, Andrea Lynn" <alsterdis@tva.gov>
Tracking Status: None
"Spink, Thomas E" <tespink@tva.gov>
Tracking Status: None
"Sebrosky, Joseph" <Joseph.Sebrosky@nrc.gov>
Tracking Status: None

Post Office: TVACOCXVS1.main.tva.gov

Files	**Size**	**Date & Time**
MESSAGE	573	10/27/2009 5:05:38 PM
BLN RAI Response to RAI Letter 160 supp 1 rev 1 10 27 09 signed.pdf	402044	

Options
Priority: Standard
Return Notification: No
Reply Requested: Yes
Sensitivity: Normal
Expiration Date:
Recipients Received:

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

October 27, 2009

10 CFR 52.79

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

In the Matter of)
Tennessee Valley Authority)

Docket No. 52-014 and 52-015

BELLEFONTE UNITS 3 AND 4, COMBINED LICENSE APPLICATION - RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION - HYDROLOGY PROBABLE MAXIMUM FLOOD LEVEL CALCULATIONS

Reference: (1) Letter from Joseph Sebrosky (NRC) to Andrea Sterdis (TVA), Request for Additional Information Letter No. 160 Related to SRP Section 2.4.3 for the Bellefonte Units 3 and 4 Combined License Application, dated May 29, 2009.

(2) Letter from Andrea L. Sterdis (TVA) to Document Control Desk (NRC) Bellefonte Units 3 and 4, COLA-Response to Request for Additional Information (RAI) - Hydrology Probable Maximum Flood Level Calculations, dated August June 29, 2009.

This letter provides the Tennessee Valley Authority's (TVA) supplemental response to the Nuclear Regulatory Commission's (NRC) request for additional information (RAI) items included in Reference 1. This response supplements TVA's previous response provided in Reference 2.

If you should have any questions, please contact Tom Ryan at 1101 Market Street, LP5A, Chattanooga, Tennessee 37402-2801, by telephone at (423) 751-2596, or via email at wtryan@tva.gov.

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

Executed on this 27th day of Oct, 2009.

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

Enclosure
cc: See Page 2

cc: (w/ Enclosures)
J. P. Berger, EDF
J. M. Sebrosky, NRC/HQ
E. Cummins, Westinghouse
S. P. Frantz, Morgan Lewis
M. W. Gettler, FP&L
R. Grumbir, NuStart
P. S. Hastings, NuStart
P. Hinnenkamp, Entergy
M. C. Kray, NuStart
D. Lindgren, Westinghouse
G. D. Miller, PG&N
M. C. Nolan, Duke Energy
N. T. Simms, Duke Energy
K. N. Slays, NuStart
G. A. Zinke, NuStart

cc: (w/o Enclosure)
B. C. Anderson, NRC/HQ
M. M. Comar, NRC/HQ
B. Hughes/NRC/HQ
R. G. Joshi, NRC/HQ
R. H. Kitchen, PGN
M. C. Kray, NuStart
A. M. Monroe, SCE&G
C. R. Pierce, SNC
R. Reister, DOE/PM
L. Reyes, NRC/RII
T. Simms, NRC/HQ
L. Raghavan, NRC/HQ
T. Boyce, NRC/HQ

Responses to NRC Request for Additional Information letter No. 160 dated May 29, 2009
(3 pages, including this list)

Subject: Request for Additional Information Letter No. 160 Related to SRP Section 2.4.3 for the Bellefonte Units 3 and 4 Combined License Application

RAI Number	Date of TVA Response
02.04.03-09	June 29, 2009; Supplemented by this letter– see following pages.

Associated Additional Attachments / Enclosures	Pages Included
Attachment 02.04.03-09A, DVD calculation data files	9 Pages
Attachment 02.04.03-09B, Dam Rating Curve - Guntersville	266 Pages
Attachment 02.04.03-09C, 1973 Flood Data Verification Package	296 Pages
Attachment 02.04.03-09D, Flood Operational Guides	64 Pages
Attachment 02.04.03-09E, Reservoir Storage Tables	177 Pages
Attachment 02.04.03-09F, Proc&Val NWS NEXRAD Data	55 Pages

NRC Letter Dated: May 12, 2009

NRC Review of Final Safety Analysis Report

TVA presents calculations of the probable maximum flood (PMF) height at the Bellefonte COL Site in Section 2.4.3 of the FSAR. These calculations address regulatory requirements associated with General Design Criterion 2 and 10 CFR 100.20(c). This question is a follow-on question to RAI 2.4.3-8, which was issued on 5/12/09. In RAI 2.4.3-8 the staff requested that TVA provide calculation packages/documents associated with TVA's computation of the probable maximum flood height (PMF). The information that was requested in this RAI was based on a TVA presentation at a public meeting on March 30, 2009. The calculation packages that the staff requested were for the watershed that TVA was modeling above the Guntersville Dam on the Tennessee River.

In a May 15, 2009, letter updating the status of TVA's hydrology review (ADAMS accession number ML091390057) TVA informed the staff that it had altered its approach to account for the tailwater effect and rating curve for the Guntersville Dam. To do this TVA is adding the Wheeler Reservoir to the Bellefonte 3 and 4 probable maximum flood model to determine the Guntersville Dam tailwater effect. The NRC requests that TVA provide the input files used to model the Wheeler Reservoir. This request includes unit hydrographs, dam -rating curves, and other input calculations that TVA is developing for this reservoir. The staff requests this information in order to develop its confirmatory model of the Tennessee River.

BLN RAI ID: 2936

BLN RESPONSE:

TVA will provide the following input information associated with adding the Wheeler Reservoir to the BLN 3&4 PMF model by the dates defined below:

- Unit Hydrographs 11/20/09
- Channel Geometry Cross Sections 10/23/09
- Dam Rating Curves 09/30/09
- SOCH Calibration 11/30/09
- Other Input Calcs* 09/30/09

* Other Input Calcs include calculation revisions for: Precipitation Data Processing (1973 Storm); NEXRAD Data Rainfall Data; Reservoir Storage Tables; and Operating Guidelines.

This response is PLANT-SPECIFIC.

In support of the information requested, TVA is providing the enclosed copies of requested calculations and a BLN Hydrology data DVD. All calculations submitted under this letter are revisions of previously submitted calculations, which have been revised to support the Wheeler Reservoir extension of the project.

The actual calculation Data Files being submitted on DVD media are shown in Attachment 02.04.03-09A.

The following provides an updated status reflecting the cumulative list of documents and calculations submitted to date.

- Unit Hydrographs 11/20/09
- Channel Geometry Cross Sections 11/06/09
- Dam Rating Curves Partial**
- SOCH Calibration 11/30/09
- Other Input Calcs* Complete

**Guntersville Dam Rating Curve is included with this submittal. Remaining Dam Rating Curves to be submitted are the Tims Ford and Wheeler which will be provided in the October 23, 2009 submittal.

ASSOCIATED BLN COL APPLICATION REVISIONS:

None

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 02.04.03-09A: BLN Hydrology Project Calculation DVD calculation data files

Attachment 02.04.03-09B: Dam Rating Curve - Guntersville

Attachment 02.04.03-09C 1973 Flood Data Verification Package

Attachment 02.04.03-09D Flood Operational Guides

Attachment 02.04.03-09E Reservoir Storage Tables

Attachment 02.04.03-09F Processing and Validation of NWS NEXRAD Data

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 02.04.03-09A: BLN Hydrology Project Calculation DVD List Supplement 1

(9 Pages including Cover Sheet)

RAI 02.04.03-9

RAI 160 Supplement 1

SOCH Software Documentation

TABLE - Data on DVD-008

Calculation **CDQ000020080011, Rev. 1**

Title **Dam Rating Curve - Guntersville**

EDMS Number: **L58 090908 002**

	Type	NRC ADAMS Form
Summary		
Total Electronic Files on DVD: 1		
Guntersville.xls	xls	File

Calculation **CDQ000020080049, Rev. 1**

Title **1973 Flood Data Verification Package**

EDMS Number: **L58 090921 001**

Summary

Total Electronic Files on DVD: 145

	Type	NRC ADAMS Form
jobl1.gpf	gpf	File
Rainfall Shape Files (24 files on DVD)	misc	24 Files
Geodatabase Files (72 files on DVD)	misc	72 Files
ReservoirAreasMicrostation.xls	xls	File
Station Locations_2D.dgn	dgn	File
THEISSENS.dgn	dgn	File

THEISSENS.xls	xls	File
voronoi.doc.txt	txt	File
voronoi.exe.txt	txt	File
voronoi.in	in	File
voronoi.out	out	File
voronoi.OUT.xls	xls	File
voronoi.tar.txt	txt	File
voronoi-edges.csv	csv	File
voronoi-vertices.csv	csv	File
Chickamauga_Local_123108.dat	dat	File
Chickamauga_Reservoir021309.dat	dat	File
Clinch_R_above_mile_16_123008.dat	dat	File
Clinch_R_mouth_to_mile_16_123008.dat	dat	File
Fort_Loudoun_local_123008.dat	dat	File
Fort_Loudoun_Reservoir_020509.dat	dat	File
French_Broad_R_local_123008.dat	dat	File
Guntersville_north_local_051209.dat	dat	File
Guntersville_Reservoir_020509.dat	dat	File
Guntersville_south_local_051209.dat	dat	File
Hiwassee_R_local_at_Charleston_123008.dat	dat	File
Holston_River_local_051209.dat	dat	File
Little_TN_R_local_UA24_021309.dat	dat	File
Little_River_at_mouth_020509.dat	dat	File
Melton_Hill_local_020509.dat	dat	File
Melton_Hill_Reservoir_020509.dat	dat	File
Nickajack_local_123008.dat	dat	File
Nickajack_Reservoir_020509.dat	dat	File
North_Chickamauga_Creek_123008.dat	dat	File
Poplar_Cr_at_mouth_020509.dat	dat	File
Tellico_Reservoir_021309.dat	dat	File
Watts_Bar_local_ab_Clinch_R_UA25_021309.dat	dat	File

Watts_Bar_local_below_Clinch_R_UA37_021309.dat	dat	File
Watts_Bar_Reservoir_021309.dat	dat	File
Attachment_13_Rainfall_Data_Hourly_Summation_&_Daily_Adjustments.xls	xls	File
Attachment_14_20090818_Corrected_Thiessen_Weights.xls	xls	File
20090818_Cotaco_Creek_Local.dat	dat	File
20090818_Elk_River_Local_16.5.dat	dat	File
20090818_Flint_River_Local.dat	dat	File
20090818_Limestone_Creek_Local.dat	dat	File
20090818_Limestone_Creek_near_Athens.dat	dat	File
20090818_Paint_Rock_Local.dat	dat	File
20090818_Sugar_Creek_at_Mouth.dat	dat	File
20090824_Richland_Creek_at_Mouth.dat	dat	File
20090828_Wheeler_Local.dat	dat	File
Attachment_05_Rainfall Data Hourly Summation and Daily Adjustments.xls	xls	File

Calculation **CDQ000020080050, Rev. 1**

Title **Flood Operational Guides**

EDMS Number: **L58 090819 001**	**Type**	**NRC ADAMS Form**

Summary

Total Electronic Files on DVD: 1

SOCH input data.xls	xls	File

Calculation **CDQ000020080051, Rev. 1**

Title **Reservoir Storage Tables**

EDMS Number: **L58 090911 001**	**Type**	**NRC ADAMS Form**

Summary

Total Electronic Files on DVD: 1

Reservoir_Storage_Table_Worksheet.xlsx	xlsx	File

Calculation **CDQ000020080055, Rev. 2**

Title **Processing and Validation of NWS NEXRAD Data**

EDMS Number: **L58 090921 002**	**Type**	**NRC ADAMS Form**

Summary

Total Electronic Files on DVD: 116

Att 2-1 nws_precip_allpoint_conversion.shp	shp	File
Att 2-2 nws_precip_allpoint_conversation.dbf	dbf	File
Att 2-3 nws_precip_allpoint_conversation.prj	prj	File
Att 2-4 nws_precip_allpoint_conversion.sbn	sbn	File
Att 2-5 nws_precip_allpoint_conversion.sbx	sbx	File
Att 2-6 nws_precip_allpoint_conversion.shx	shx	File
Att 3-1 AboveGuntersvilleDrainageAreas_May14_2008.shp	shp	File
Att 3-2 AboveGuntersvilleDrainageAreas_May14_2008.dbf	dbf	File
Att 3-3 AboveGuntersvilleDrainageAreas_May14_2008.prj	prj	File
Att 3-4 AboveGuntersvilleDrainageAreas_May14_2008.sbn	sbn	File
Att 3-5 AboveGuntersvilleDrainageAreas_May14_2008.sbx	sbx	File
Att 3-6 AboveGuntersvilleDrainageAreas_May14_2008.shx	shx	File

Att 4 Watersh.dbf	dbf	File
Att 5-1 Watershed_Hourly_Precip_01011997_12311997_R000B.xls	xls	File
Att 5-2 Watershed_Hourly_Precip_01011998_12311998_R000B.xls	xls	File
Att 5-3 Watershed_Hourly_Precip_01011999_12311999_R000B.xls	xls	File
Att 5-4 Watershed_Hourly_Precip_01012000_12312000_R000B.xls	xls	File
Att 5-5 Watershed_Hourly_Precip_01012001_12312001_R000B.xls	xls	File
Att 5-6 Watershed_Hourly_Precip_01012002_12312002_R000B.xls	xls	File
Att 5-7 Watershed_Hourly_Precip_01012003_12312003_R0008.xls	xls	File
Att 5-8 Watershed_Hourly_Precip_01012004_12312004_R000B.xls	xls	File
Att 5-9 Watershed_Hourly_Precip_01012005_12312005_R000B.xls	xls	File
Att 5-10 Watershed_Hourly_Precip_01012006_12312006_R000B.xls	xls	File
Att 5-11 Watershed_Hourly_Precip_01012007_12312007_R000B.xls	xls	File
Att 5-12 Watershed_Hourly_Precip_01012008_04302008_R000B.xls	xls	File
Att 6-1 BegGISHRAP_exe.txt	txt	File
Att 6-2 BecGISHRAP.pdb	pdb	File
Att 6-3 BecGISHRAP.xml	xml	File
Att 6-4 BecGISCommonWindowsControls.dll	dll	File
Att 6-5 BecGISCommonWindowsControls.pdb	pdb	File
Att 6-6 BecGISCommonWindowsControls.xml	xml	File
Att 7-1 Watersheds_12Dig_Modified_10292008.shp	shp	File
Att 7-2 Watersheds_12Dig_Modified_10292008.dbf	dbf	File
Att 7-3 Watersheds_12Dig_Modified_10292008.prj	prj	File
Att 7-4 Watersheds_12Dig_Modified_10292008.sbn	sbn	File
Att 7-5 Watersheds_12Dig_Modified_10292008.sbx	sbx	File
Att 7-6 Watersheds_12Dig_Modified_10292008.shx	shx	File
Att 7-7 Watersheds_12Dig_Modified_10292008.shp.xml	xml	File
Att 8 Watersh2.dbf	dbf	File
Att 9-1 NickajackDam_Hourly_Precip_01011997_12311997_R000A.xls	xls	File
Att 9-2 NickajackDam_Hourly_Precip_01011998-12311998_R000A.xls	xls	File
Att 9-3 NickajackDam_Hourly_Precip_01011999-12311999_R000A.xls	xls	File
Att 9-4 NickajackDam_Hourly_Precip_01012000-12312000_R000A.xls	xls	File
Att 9-5 NickajackDam_Hourly_Precip_01012001-	xls	File

12312001_R000A.xls		
Att 9-6 NickajackDam_Hourly_Precip_01012002-12312002_R000A.xls	xls	File
Att 9-7 NickajackDam_Hourly_Precip_01012003-12312003_R000A.xls	xls	File
Att 9-8 NickajackDam_Hourly_Precip_01012004-12312004_R000A.xls	xls	File
Att 9-9 NickajackDam_Hourly_Precip_01012005-12312005_R000A.xls	xls	File
Att 9-10 NickajackDam_Hourly_Precip_01012006_12312006_R000A.xls	xls	File
Att 9-11 NickajackDam_Hourly_Precip_01012007_12312007_R000A.xls	xls	File
Att 9-12 Nickajack Dam_Hourly_Precip_01012008_04302008_R000A.xls	xls	File
Att 10-01 Watershed_Hourly_Precip_01011997_12311997.xls	xls	File
Att 10-02 Watershed_Hourly_Precip_01011998_12311998.xls	xls	File
Att 10-03 Watershed_Hourly_Precip_01011999_12311999.xls	xls	File
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Att A-2-2 xmrgtoasc.c	c	File
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Att A-3-3 blue.dbf	dbf	File
Att A-3-4 blue.prj	prj	File
Att A-3-5 blue.sbn	sbn	File
Att A-3-6 blue.sbx	sbx	File
Att A-3-7 blue.shx	shx	File

Att A-4-1 modeled_tva_basins.dbf	dbf	File
Att A-4-2 modeled_tva_basins.sbn	sbn	File
Att A-4-3 modeled_tva_basins.sbx	sbx	File
Att A-4-4 modeled_tva_basins.shx	shx	File
Att A-4-5 modeled_tva_basins.shp	shp	File
Att A-5-1 NOLT1.hrap	hrap	File
Att A-5-2 EMBT1.hrap	hrap	File
Att A-6-1 NOLT1.mapx01	mapx01	File
Att A-6-2 EMBT1.mapx01	mapx01	File
Att A-6-3 BRDG1.mapx01	mapx01	File
Att A-6-4 HURG1.mapx01	mapx01	File
Att A-7-1 xmrg0505200312z.asc	asc	File
Att A-7-2 xmrg0505200312z.out.asc	asc	File
Att A-7-3 xmrg0916200418z.asc	asc	File
Att A-7-4 xmrg0916200418z.out.asc	asc	File
Att A-7-5 xmrg0506199516z.asc	asc	File
Att A-8 WatershedComparison_TVA_ModeledMRFC_Detail.jpg	jpg	File
Att A-9-1 p0505200312_watershed.shp	shp	File
Att A-9-2 p0505200312_watershed.dbf	dbf	File
Att A-9-3 p0505200312_watershed.prj	prj	File
Att A-9-4 p0505200312_watershed.sbn	sbn	File
Att A-9-5 p0505200312_watershed.sbx	sbx	File
Att A-9-6 p0505200312_watershed.shx	shx	File
Att A-9-7 p0505200312_watershed.xls	xls	File
Att A-9-8 p0916200418_watershed.shp	shp	File
Att A-9-9 P0916200418_watershed.dbf	dbf	File
Att A-9-10 p0916200418_watershed.prj	prj	File
Att A-9-11 p0916200418_watershed.sbn	sbn	File
Att A-9-12 p0916200418_watershed.sbx	sbx	File
Att A-9-13 p0916200418_watershed.shx	shx	File
Att A-9-14 p0916200418_watershed.xls	xls	File

Att A-9-15 MAPX_Compare_Rev0_Rev1_NickajackDam.xls	xls	File
Att A-10-1 Watershed_Hourly_Precip_05022003_05082003_R000A.xls	xls	File
Att A-10-2 Watershed_Hourly_Precip_09152004_09212004_R000A.xls	xls	File
Att A-11-1 MAPX_Compare_Utility_RFC_Nolichucky_Dam_May2003_Sept2004.xls	xls	File
Att A-11-2 MAPX_Compare_Utility_RFC_Nolichucky_at_Embreeville_May2003_Sept2004.xls	xls	File
Att A-11-3 MAPX_Compare_Utility_RFC_BlueRidge_May2003_Sept2004.xls	xls	File
Att A-12-1 Basin_Hourly_Precip_05022003_05082003.xls	xls	File
Att A-12-2 Basin_Hourly_Precip_09152004_09212004.xls	xls	File
Att A-13-1 MAPX_Compare_Utility_RFC_NOLT1_May2003_Sept2004.xls	xls	File
Att A-13-2 MAPX_Compare_Utility_RFC_EMBT1_May2003_Sept2004.xls	xls	File
Att A-13-3 MAPX_Compare_Utility_RFC_BRDG1_May2003_Sept2004.xls	xls	File
Att A-13-4 MAPX_Compare_Utility_RFC_HURG1_May2003_Sept2004.xls	xls	File

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 02.04.03-09B: Guntersville Calculation

Calculation **CDQ000020080011, Rev. 1**

Title **Dam Rating Curve - Guntersville**

EDMS Number: **L58 090908 002**

(266 Pages including Cover Sheet)

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 02.04.03-09C: Calc CDQ000020080049_Rev 1_1973 Flood Data Verification_21Sep09

Calculation **CDQ000020080049, Rev. 1**

Title **1973 Flood Data Verification Package**

EDMS Number: **L58 090921 001**

(296 Pages including Cover Sheet)

RAI 02.04.03-9

RAI 160 Supplement 1

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 02.04.03-09D: Calc CDQ000020080050_Rev 1_Flood Operational Guide_11Aug09

Calculation **CDQ000020080050, Rev. 1**

Title **Flood Operational Guides**

EDMS Number: **L58 090819 001**

(64 Pages including Cover Sheet)

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 02.04.03-09E: Calc CDQ000020080051_Reservoir_Storage_Rev_1

Calculation **CDQ000020080051, Rev. 1**

Title **Reservoir Storage Tables**

EDMS Number: **L58 090911 001**

(177 Pages including Cover Sheet)

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 02.04.03-09F: Calc CDQ000020080055_Rev 2_MAPX Data Series_21Sep09

Calculation **CDQ000020080055, Rev. 2**

Title **Processing and Validation of NWS NEXRAD Data**

EDMS Number: **L58 090921 002**

(55 Pages including Cover Sheet)