



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

February 3, 2010

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

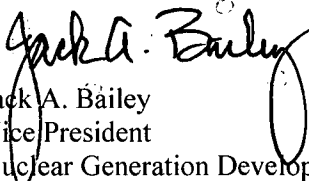
**BELLEFONTE UNITS 3 AND 4, COMBINED LICENSE APPLICATION - RESPONSE TO  
REQUEST FOR ADDITIONAL INFORMATION - HYDROLOGY PROBABLE MAXIMUM  
FLOOD LEVEL CALCULATIONS**

- References: (1) Letter from Joseph Sebrosky (NRC) to Andrea Sterdis (TVA), Request for Additional Information Letter No. 158 Related to SRP Section 2.4.3 for the Bellefonte Units 3 and 4 Combined License Application, dated May 12, 2009.
- (2) Letter from Jack A. Bailey (TVA) to Document Control Desk (NRC), Bellefonte Combined License Application-Periodic Update-Hydrology, dated February 2, 2010.

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 3<sup>rd</sup> day of Feb, 2010.

  
Jack A. Bailey  
Vice President  
Nuclear Generation Development

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cc: See Page 3

DOBS  
NRD

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Responses to NRC Request for Additional Information letter No. 158 dated May 12, 2009  
(2 pages, including this list)  
Subject: Hydrology Probable Maximum Flood Level Calculations

RAI Number                      Date of TVA Response  
02.04.03-08                      May 15, 2009; Supplemented by this letter – see following pages

| <u>Associated Additional Attachments / Enclosures</u> |   | <u>Pages Included</u> |
|---|---|-----------------------|
| Attachment 02.04.03-08A                               | BLN Hydrology Project RAI 158 Supplement 1 Calculation List                 | 5 pages               |
| Attachment 02.04.03-08B                               | SOCH Version 1 SDD, Rev. 0  | 12 pages              |
| Attachment 02.04.03-08C                               | SOCH Version 1 SRS, Rev. 0  | 64 pages              |
| Attachment 02.04.03-08D                               | SOCH Version 1 SVVR, Rev. 1   | 143 pages             |
| Attachment 02.04.03-08E                               | Guntersville Dam Watershed (Subbasins 49 and 50) Unit Hydrograph Validation | 49 pages              |

**NRC Letter Dated: May 12, 2009**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 02.04.03-08**

TVA presents calculation 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). TVA has continued to develop its analysis since the FSAR was submitted, and has developed additional calculation packages/documents associated with computation of the PMF height. The specifics of this analysis were discussed during a March 30, 2009 public meeting held at NRC Headquarters (see ML091180052 and ML0911204490). The NRC staff requests that TVA provide the following input deliverables:

- (a) V&V Docs (16 docs; April 2009)1
- (b) UH Calcs – Rev 0 (17 calcs; April 2009)
- (c) UH Calcs – Rev 1 (5 calcs; June 2009)
- (d) Dam Rating Curves (20 calcs; March 2009)
- (e) SOCH Calibrations (6 calcs; July 2009)
- (f) Other Input Calcs (3 calcs; April 2009)

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The titles of these input deliverables follow the naming convention used by TVA on Slide 10 of its March 30, 2009 presentation (see ML091180052). The number of calculations/documents and the anticipated TVA completion date are shown in parenthesis. This information also originates from Slide 10 of the presentation.

Enclosure

1) TVA can provide the information in item (a) above on the docket or provide the information in reading rooms to which NRC and its' contractors have access.

**BLN RAI ID: 2778**

**BLN RESPONSE:**

TVA is providing BLN Hydrology Calculation List to support the information requested in the associated RAI request. See attached Attachment 02.04.03-08A, "BLN Hydrology Project Calculation List" for the documents and disks that are associated with this submittal.

This response is PLANT-SPECIFIC.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

None

**ASSOCIATED ATTACHMENTS/ENCLOSURES:**

|                         |                                |   |
|-------------------------|--------------------------------|---|
| Attachment 02.04.03-08A | BLN Hydrology Project          | RAI 158 Supplement 1<br>Calculation List  |
| Attachment 02.04.03-08B | SOCH Version 1 SDD, Rev.<br>0  |   |
| Attachment 02.04.03-08C | SOCH Version 1 SRS, Rev. 0     |   |
| Attachment 02.04.03-08D | SOCH Version 1 SVVR,<br>Rev. 1 |   |
| Attachment 02.04.03-08E | CDQ000020080059                | Guntersville Dam Watershed<br>(Subbasins 49 and 50) Unit<br>Hydrograph Validation |

Attachment 02.04.03-08A  
TVA letter dated February 3, 2010  
RAI Response

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 02.04.03-8A: BLN Hydrology Project RAI 158 Supplement 1 Calculation List

(5 Pages including Cover Sheet)

Attachment 02.04.03-08A  
TVA letter dated February 3, 2010  
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Title **SOCH Version 1 SDD, Rev. 0**

EDMS Number: **L58 090528 003**

Summary

Total Hard Copy Pages: 11

Total Electronic Files on DVD: 0

**File Inventory for NRC Documentation Submittal**

|                       | <u>Type</u> | <u>Pages</u> | <u>NRC<br/>ADAMS Form</u> |
|-----------------------|-------------|--------------|---------------------------|
| Calculation Main Body | pdf         | 11           | Paper                     |

**Electronic Attachments**

(No Attachments)

Title **SOCH Version 1 SRS, Rev. 0**

EDMS Number: **L58090528 001**

Summary

Total Hard  
Copy Pages: 63

Total Electronic Files on  
DVD: 0

**File Inventory for NRC Documentation Submittal**

|                       | <u>Type</u> | <u>Pages</u> | <u>NRC<br/>ADAMS<br/>Form</u> |
|-----------------------|-------------|--------------|-------------------------------|
| Calculation Main Body | pdf         | 63           | Paper                         |

**Electronic  
Attachments**

(No Attachments)

Title **SOCH Version 1 SVVR, Rev. 1**

Attachment 02.04.03-08A  
 TVA letter dated February 3, 2010  
 RAI Response

EDMS Number: **L58 091223 006**

Summary

|                                |            |
|--------------------------------|------------|
| Total Hard Copy Pages:         | <u>142</u> |
| Total Electronic Files on DVD: | <u>29</u>  |

**File Inventory for NRC Documentation Submittal**

|   | <u>Type</u> | <u>Pages</u> | <u>NRC<br/>ADAMS<br/>Form</u> |
|---|-------------|--------------|-------------------------------|
| Calculation Main Body   | pdf         | 138          | Paper                         |
| <b><u>Electronic Attachments</u></b>  |             |              |                               |
| Attachment 1 SOCH Input Files.pdf   | pdf         | 1            | Paper                         |
| Electronic Attachment 1 (SOCH Input).zip.txt<br>(Each zip file has been unzipped into 29<br>separate folders.   | NA          | NA           | NA                            |
| Attachment 2 SOCH Output Files.pdf  | pdf         | 1            | Paper                         |
| Electronic Attachment 2 (SOCH Output).zip.txt<br>(Each zip file has been unzipped into 29<br>separate folders.  | NA          | NA           | Files                         |
| Attachment 3- SOCH TVA Storage of Source<br>Executables.pdf   | pdf         | 1            | Paper                         |
| Attachment 4 SOCH Independent Calculations.pdf<br>(Each zip file has been unzipped into 27 separate<br>folders. | pdf         | 1            | Paper                         |
|   | NA          | NA           | Files                         |

Calculation **CDQ000020080059, Rev. 1**

Title **Guntersville Dam Watershed (Subbasins 49 and 50) Unit Hydrograph  
 Validation**

EDMS Number: **L58 091230 035**

Summary

|                                |           |
|--------------------------------|-----------|
| Total Hard Copy Pages:         | <u>48</u> |
| Total Electronic Files on DVD: | <u>25</u> |

**File Inventory for NRC Documentation Submittal**

|                                      | <u>Type</u> | <u>Pages</u> | <u>NRC<br/>ADAM<br/>S Form</u> |
|--------------------------------------|-------------|--------------|--------------------------------|
| Calculation Main Body                | pdf         | 48           | Paper                          |
| <b><u>Electronic Attachments</u></b> |             |              |                                |

Attachment 02.04.03-08A  
TVA letter dated February 3, 2010  
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|  |     |    |      |
|--|-----|----|------|
| Attachment 1-1 Convolution 1973_B49.xls                                | xls | NA | File |
| Attachment 1-10 guntersville_rev0.xls                                  | xls | NA | File |
| Attachment 1-11 nickajack_rev0.xls                                     | xls | NA | File |
| Attachment 1-12 Precipitation_2003_B49.xls                             | xls | NA | File |
| Attachment 1-13 Precipitation_2003_B50.xls                             | xls | NA | File |
| Attachment 1-14 SB 49 & 50 Precip 1973.xls                             | xls | NA | File |
| Attachment 1-15 SB 49 & 50 Base Flow 1973 & 2003.xls                   | xls | NA | File |
| Attachment 1-16 SB 49 & 50 Total Local Inflow                          |     |    |      |
| Hydrographs 1973 & 2003.xls  | xls | NA | File |
| Attachment 1-17 SequatchieRiverProcessing.xls                          | xls | NA | File |
| Attachment 1-18 SOCH Model Runs for March 1973.xls                     | xls | NA | File |
| Attachment 1-19 SOCH Model Runs for May 2003.xls                       | xls | NA | File |
| Attachment 1-2 Convolution 1973_B50.xls                                | xls | NA | File |
| Attachment 1-20 Validated Unit Hydrograph Ordinates for SB 49 & 50.xls | xls | NA | File |
| Attachment 1-3 Convolution 2003_B49.xls                                | xls | NA | File |
| Attachment 1-4 Convolution 2003_B50.xls                                | xls | NA | File |
| Attachment 1-5 FLDHDYRO Processing.xls                                 | xls | NA | File |
| Attachment 1-6   |     |    |      |
| GriddedPrecipitationDataAllSubasins2003.xls                            | xls | NA | File |
| Attachment 1-7 Gunterreservoir_Mass Balance 1973.xls                   | xls | NA | File |
| Attachment 1-8 Gunterreservoir_Mass Balance 2003.xls                   | xls | NA | File |
| Attachment 1-9 Gunterreservoir_Precipitation over water.xls            | xls | NA | File |
| Attachment 2-1 Mar1973_GuntLocals_Fldhydro.dat                         | dat | NA | File |
| Attachment 2-2 Mar1973_GuntLocals_Fldhydro.out                         | out | NA | File |
| Attachment 2-3 May2003_GuntLocals_Fldhydro.dat                         | dat | NA | File |
| Attachment 2-4 May2003_GuntLocals_Fldhydro.out                         | out | NA | File |
| Attachment 2-5 SequatchieNrWhitwell.txt                                | txt | NA | File |