## PMBelCOL PEmails

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**To:** 'Ray, Phillip M'; 'erg-xl@cox.net'
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**Subject:** INFO: Bellefonte seismology trip report
**Attachments:** bellefonte seismology trip report.pdf

Phil,

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Joe Sebrosky
Senior Project Manager
NRO/DNRL/NWE1
301-415-1132

**Hearing Identifier:** Bellefonte_COL_Public_EX
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November 20, 2008

MEMORANDUM: Stephanie Coffin, Chief
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

FROM: Joseph Sebrosky, Senior Project Manager **/RA/**
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: TRIP REPORT – OCTOBER 27-29, 2008, SEISMOLOGY AND GEOTECHNICAL SITE VISIT IN SUPPORT OF THE BELLEFONTE COMBINED LICENSE APPLICATION

This report summarizes the NRC trip to the Bellefonte site and surrounding area during the period of October 27-29, 2008, to support the seismology and geotechnical review of the Tennessee Valley Authority's (TVA) Bellefonte combined license application (COLA). The attendance list for the meeting is provided in Enclosure 1. The agenda for the site visit is contained in Enclosure 2. During the site visit TVA provided two presentations. The first presentation was an overview of the work that was done to support final safety analysis report (FSAR) section 2.5, "Geology, Seismology, and Geotechnical Information" of the Bellefonte COLA. The second presentation provided an overview of the linament investigations that were done to support the COLA. The 2.5 FSAR presentation and the linament presentation are available in ADAMS under accession numbers ML083110228 and ML083110229, respectively.

The purpose of the trip was for the staff to visit the site to aid the staff in the review of Section 2.5 of the Bellefonte COLA. The site visit allowed the staff and TVA to discuss the requests for additional information (RAIs) that had been issued prior to the site visit and to observe features that are discussed in the Bellefonte COLA and RAI responses. During the visit the staff viewed some of the core borings that had been done in support of the Bellefonte COLA. Specifically, the staff looked at the core borings that were extracted from the proposed centerline locations of the containment structures for Units 3 and 4.

The following action items resulted from the meeting:

1. TVA is to consider whether the "Known Cave Map Within 5 Miles" figure contained on page 22 of TVA's 2.5 FSAR presentation (see ADAMS accession number ML083110228) should be in the Bellefonte Units 3 and 4 FSAR. During the meeting TVA indicated that the type of rock formation found on the Bellefonte site does not typically lead to cave formations. TVA is to consider whether it will supplement RAI 2.5.4-1 to provide a commitment to revise the FSAR to include both the figure and a description of why the type of rock formation at the site does not typically lead to cave formations.

2. TVA is to determine if there is a discrepancy between Figure 2.4.2-202 and FSAR Section 2.5.4 that provides a description of the grading plan.

3. The staff requested that TVA provide it with Section 2.5 of the Bellefonte Unit 1 and 2 FSAR. The staff stated that although this information was available to the staff through the legacy library in ADAMS it was not easily obtainable. The staff requested the information in order to compare section 2.5 of the Bellefonte Unit 1 and 2 FSAR against section 2.5 of the Bellefonte 3 and 4 FSAR.

4. In TVA's October 3, 2008, response to RAI 2.5.1-2 (ADAMS accession number ML082810404), there is mention of a report associated with a "joint" located in the northwest corner of the Unit 1 QA Records Storage Vault. TVA is to consider supplementing the response to include the report in its response or a discussion of the key elements of the report that lead TVA to the conclusion that this "joint" is not a problem.

5. The NRC staff took an action to review TVA's responses that it had received to date and to determine if the responses resolved the issue or if further information was needed. In addition, the staff took the following actions:

   - The staff would determine if critical elements of the excavation blasting program needed to be placed in the FSAR.

   - The staff would determine if a follow-on question was necessary regarding the contact between the various bedding plains that are located on the Bellefonte site. The possible question involves whether there could be a problem with a shear force because of the angle associated with these bedding plains and the different sedimentation in the bedding plains.

   - The staff was going to investigate whether the U.S. Geologic Survey had literature regarding evidence of prehistoric landslides

Docket Nos.: 52-014 and 52-015

CONTACT: Joseph Sebrosky, NRO/DNRL/NWE1
(301) 415-1132

Enclosures:
As stated

2. TVA is to determine if there is a discrepancy between Figure 2.4.2-202 and FSAR Section 2.5.4 that provides a description of the grading plan.

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6. The NRC staff took an action to review TVA's responses that it had received to date and to determine if the responses resolved the issue or if further information was needed. In addition, the staff took the following actions:

   - The staff would determine if critical elements of the excavation blasting program needed to be placed in the FSAR.

   - The staff would determine if a follow-on question was necessary regarding the contact between the various bedding plains that are located on the Bellefonte site. The possible question involves whether there could be a problem with a shear force because of the angle associated with these bedding plains and the different sedimentation in the bedding plain

   - The staff was going to investigate whether the U.S. Geologic Survey had literature regarding evidence of prehistoric landslides

Docket Nos.: 52-014 and 52-015

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Enclosures:
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| DATE | 11/20/08 | 11/20/08 | 11/20/08 |

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October 27 – 29, 2008 Site Visit to the Bellefonte Site and Surrounding Area
To Discuss Geotechnical and Seismology Review in Support of the
Bellefonte Combined License Application
Attendance List

| **Name** | **Organization** |
|---|---|
| Yong Li | NRO/DSER/ |
| Laurel Bauer | NRO/DSER/ |
| Zahira Cruz* | NRO/DSER/ |
| Joe Sebrosky | NRO/DNRL/NWE1 |
| Rus Wheeler | United States Geologic Survey (USGS) – NRC consultant |
| Steve Harmsen | USGS |
| Di-Wen Chen* | South Carolina State University – NRC consultant |
| John Jy-An Wang* | Oak Ridge National Laboratory – NRC consultant |
| Phillip Ray | TVA |
| Gary Lyles* | TVA |
| Jeff Munsey | TVA |
| Jim Chardos** | TVA |
| Fred Redwanz* | NuStart |
| Eddie R Grant | NuStart |
| Bill Godwin | William Lettis and Associates – TVA consultant |
| Janet Sowers | William Lettis and Associates |
| Jeff Bachhuber | William Lettis and Associates |
| Al Tice | Mactec |

* denotes an individual that was present the first two days of the site visit
** denotes an individual that was present during the entrance discussion on the first day

Enclosure 1

**SCHEDULE FOR NRC SEISMIC SITE VISIT**
**Bellefonte Units 3 and 4**
October 27-30, 2008

Monday, Oct. 27th

Morning - Travel to site
Lunch before arrival to site
1:00 – Introduction and safety session
1:30 – Review Agenda
1:45 – Site layout presentation
2:15 – NRC questions and discussion
3:00 – Open issues and RAI discussion
4:00 – NRC Wrap-up

Tuesday, Oct. 28th

8:00 – Safety Session
8:15 – Discussion of what will be seen on the trip
8:30 – Board van for ride to River Ridge near Barge Dock
10:30 – NRC question and discussion of trip

12:00 – Lunch at site
1:00 – Review of rock core of B-1005, B-1034 and B-1051A
3:00 – NRC Questions and discussion
3:30 – Presentation on fault lineaments
4:00 – NRC Questions and discussion
4:30 – NRC debrief and close

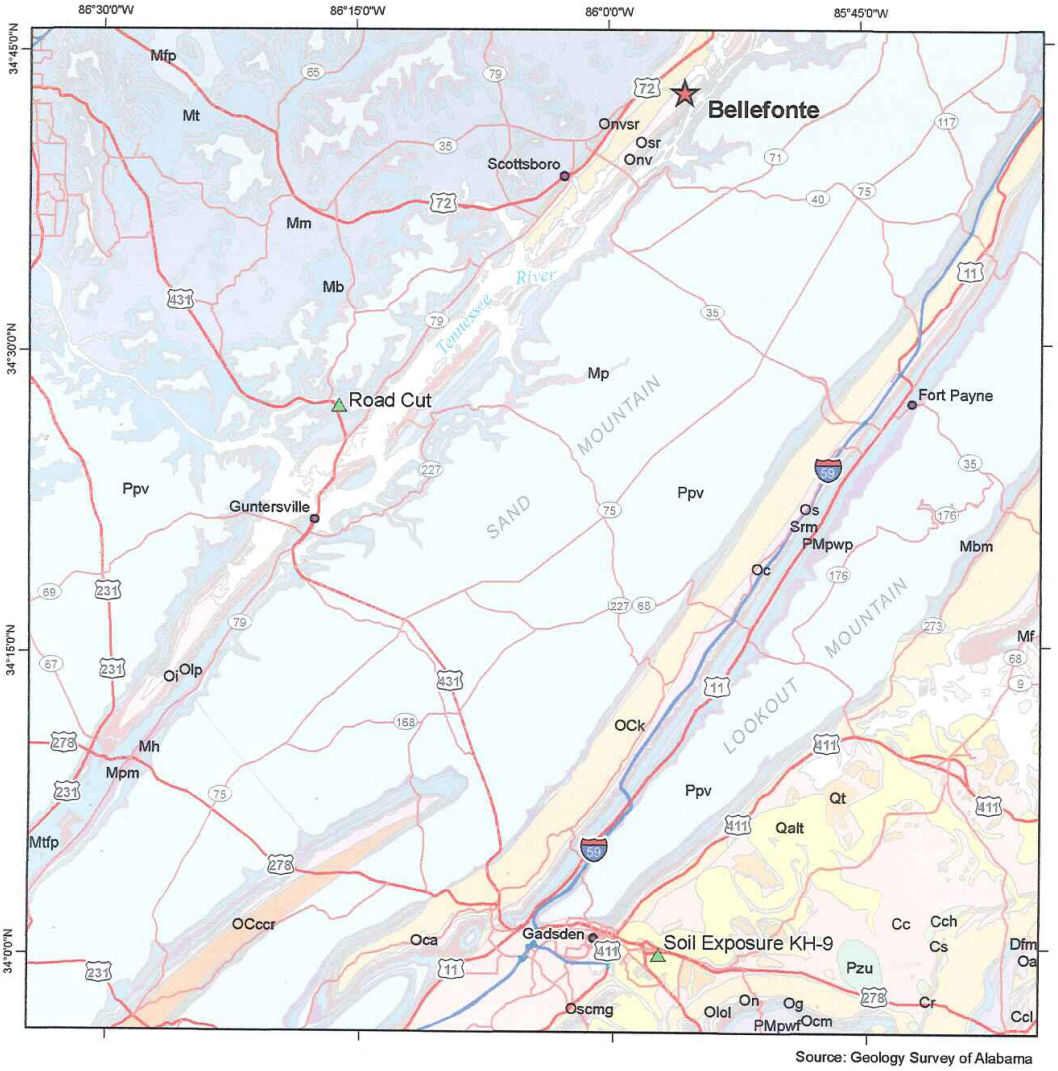
Wednesday, Oct 29th

8:00 – Safety Session
8:15 – Board van and travel to Gadsden
9:45 – Arrive in Gadsden, view geologic exposure (see map below for location – indicated by green triangle)

12:00 – Lunch in Gadsden
1:00 – Board van and travel back to site
1:45 – View geologic outcrop on route (see map below for location – indicated by triangle)
2:15 – Board van and travel back to site
3:00 – Arrive at BLN unload
3:15 – NRC debrief and close

Thursday, Oct 30th (Optional day)

8:00 – Debrief and wrap-up by NRC
10:00 Travel




Source: Geology Survey of Alabama

**Description of Geologic Units**

| | | | |
|---|---|---|---|
| Qalt | Alluvial and low terrace deposits | Dc | Chattanooga Shale |
| Qt | High terrace deposits | Srm | Red Mountain Formation |
| Ppv | Pottsville Formation | Os | Sequatchie Formation |
| Mp | Pennington Formation | Onv | Nashville Group |
| Mb | Bangor Formation | Osr | Stones River Group (undifferentiated in part) |
| Mm | Monteagle Formation | OCk | Knox Group (undifferentiated in part) |
| Mt | Tuscumbia Limestone | Cc | Conasauga Formation |
| Mtp | Fort Payne Chert | | |

N

0 10 mi

0 10 km

WLA

D-113

**Field Trip Route, October 29, 2008**

NUSTART BLN FIELD TRIP

Figure 1