

August 17, 2011

MEMORANDUM: Jeffrey Cruz, Chief  
AP1000 Projects Branch 1  
Division of New Reactor Licensing  
Office of New Reactors

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

SUBJECT: TRIP REPORT – July 11-15, 2011, GEOLOGIC SITE VISIT IN SUPPORT  
OF THE WILLIAM STATES LEE III COMBINED LICENSE APPLICATION

This report summarizes activities conducted during the NRC visit to the William States Lee III (Lee) corporate offices in Charlotte, North Carolina, and the Lee Nuclear Site near Gaffney, South Carolina, over July 11-15, 2011, to support the geologic, seismic, and geotechnical review of the Duke Energy Carolinas LLC's (Duke) combined license application (COLA) for that site. The attendance list for this visit is provided in Enclosure 1, and the agenda is contained in Enclosure 2.

During the site visit, the applicant provided information to enable NRC staff to assess the similarity of lithologies and geologic structures that occur in the excavations of the former Cherokee Nuclear Station (CNS) Unit 1 (i.e., proposed Lee Unit 1) and Unit 2. This information included a geologic map compiled from the original geologic field mapping data set that was collected in the 1970s for CNS Unit 1, which now lies under fill concrete placed for former CNS Unit 1, and stereonet plots illustrating the orientations of shear zones at CNS Units 1 and 2 to facilitate the assessment. The applicant also discussed relative and radiometric age relationships between the various geologic structures to support the interpretation that none of these structures represent capable tectonic features.

Specifically, the staff carefully examined the compiled geologic map for CNS Unit 1 (i.e., proposed Lee Unit 1) and directly examined in the field the lithologies and geologic structures occurring in the area of the adjacent CNS Unit 2 excavation, which was mapped at the same time as CNS Unit 1. The applicant had previously provided a confirmatory geologic map for a part of CNS Unit 2, produced for the Lee Nuclear Site FSAR, to ensure that recent mapping captured the same geologic features as those observed and mapped in the 1970s. By comparison of the geologic data, coupled with direct observation of lithologies and geologic structures in foundation grade level bedrock in the CNS Unit 2 excavation, the staff assessed the similarities of lithologies and geologic structures in these two excavations and determined that they are similar. The staff also examined the top of sound rock in the excavation for CNS Unit 3 (proposed Lee Unit 2) and determined that lithologies and geologic structures found therein are also similar to lithologies and structures found in the excavations for CNS Units 1 and 2.

The following action items resulted from the meeting:

1. Duke Energy will submit updated Mapping Report DUK-001-PR-01 no later than September 30, 2011, to support the issuance of an SER, which will include clearance of the geologic mapping License Condition for Lee Unit 1 if the report documents that this step is appropriate at this time. (NOTE: Final clearance of the geologic mapping License Condition for Lee Unit 1 is contingent upon content of this revised report. However, the staff anticipates that clearance will be possible.)
2. NRC will impose a geologic mapping License Condition for Lee Unit 2 in the SER, stating the applicant will provide a construction schedule to facilitate NRC inspection of the Lee Unit 2 excavation, when appropriate.

Docket Nos.: 52-018 and 52-019

CONTACT: Brian Hughes, NRO/DNRL/NWE1  
(301) 415-6582

Enclosures:  
As stated

The following action items resulted from the meeting:

3. Duke Energy will submit updated Mapping Report DUK-001-PR-01 no later than September 30, 2011, to support the issuance of an SER, which will include clearance of the geologic mapping License Condition for Lee Unit 1 if the report documents that this step is appropriate at this time. (NOTE: Final clearance of the geologic mapping License Condition for Lee Unit 1 is contingent upon content of this revised report. However, the staff anticipates that clearance will be possible.)
4. NRC will impose a geologic mapping License Condition for Lee Unit 2 in the SER, stating the applicant will provide a construction schedule to facilitate NRC inspection of the Lee Unit 2 excavation, when appropriate.

Docket Nos.: 52-018 and 52-019

CONTACT: Brian Hughes, NRO/DNRL/NWE1  
(301) 415-6582

Enclosures:  
As stated

Distribution:

PUBLIC	RCook	
RidsNroDnrlNwe1	BHughes	KRoach, OGC
RidsNroDnrlNwe2	RidsNroOd	RidsOgcMailCenter
RidsAcrsAcnwMailCenter	RidsNroDser	RidsRgn2MailCenter
RidsNroDnrl	RidsNrrOd	RidsNroLAKGoldstein

ADAMS Accession No.: ML11216A256

\*via email

NRO-002

OFFICE	LA:DNRL:NWE1*	DSER:RGS	PM:DNRL:NWE1
NAME	KGoldstein	GStirewalt	BHughes
DATE	8/16/2011	08/16/2011	08/17/11

**OFFICIAL RECORD COPY**

COL - Duke Energy - Lee Mailing List  
cc:

(Revised 04/06/2011)

Ms. Michele Boyd  
Legislative Director  
Energy Program  
Public Citizens Critical Mass Energy  
and Environmental Program  
215 Pennsylvania Avenue, SE  
Washington, DC 20003

Mr. Peter Hastings  
Duke Energy / NuStart  
EC09D / PO Box 1006  
Charlotte, NC 28201-1006

Dhiaa M. Jamil  
Group Executive and Chief Nuclear Officer  
Duke Energy Carolinas, LLC  
P.O. Box 1006 - EC03XM  
526 South Church St.  
Charlotte, NC 28201-1006

## COL - Duke Energy - Lee Mailing List

### Email

APH@NEI.org (Adrian Heymer)  
awc@nei.org (Anne W. Cottingham)  
BrinkmCB@westinghouse.com (Charles Brinkman)  
CumminWE@Westinghouse.com (Edward W. Cummins)  
cwaltman@roe.com (C. Waltman)  
david.lewis@pillsburylaw.com (David Lewis)  
Derinda.Bailey@chguernsey.com (Derinda Bailey)  
ed.burns@earthlink.net (Ed Burns)  
gzinke@entergy.com (George Alan Zinke)  
jim.riccio@wdc.greenpeace.org (James Riccio)  
Joseph\_Hegner@dom.com (Joseph Hegner)  
KSutton@morganlewis.com (Kathryn M. Sutton)  
kwaugh@impact-net.org (Kenneth O. Waugh)  
Ichandler@morganlewis.com (Lawrence J. Chandler)  
Marc.Brooks@dhs.gov (Marc Brooks)  
maria.webb@pillsburylaw.com (Maria Webb)  
mark.beaumont@wsms.com (Mark Beaumont)  
Mark.Crisp@chguernsey.com (Mark Crisp)  
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)  
media@nei.org (Scott Peterson)  
mike\_moran@fpl.com (Mike Moran)  
MSF@nei.org (Marvin Fertel)  
murawski@newsobserver.com (John Murawski)  
nirsnet@nirs.org (Michael Mariotte)  
Nuclaw@mindspring.com (Robert Temple)  
patriciaL.campbell@ge.com (Patricia L. Campbell)  
Paul@beyondnuclear.org (Paul Gunter)  
pbessette@morganlewis.com (Paul Bessette)  
pshastings@duke-energy.com (Peter Hastings)  
RJB@NEI.org (Russell Bell)  
sabinski@suddenlink.net (Steve A. Bennett)  
sandra.sloan@areva.com (Sandra Sloan)  
sfrantz@morganlewis.com (Stephen P. Frantz)  
stephan.moen@ge.com (Stephan Moen)  
Tansel.Selekler@nuclear.energy.gov (Tansel Selekler)  
TomClements329@cs.com (Tom Clements)  
Vanessa.quinn@dhs.gov (Vanessa Quinn)  
Wanda.K.Marshall@dom.com (Wanda K. Marshall)

January 27 – 29, 2009 Site Visit to the Lee Site and Surrounding Area

To Discuss Geotechnical and Seismology Review in Support of the

Lee Combined License Application

Attendance List

<b>Name</b>	<b>Organization</b>
Gerry Stirewalt	NRC/NRO/DSER/
Brian Hughes	NRC/NRO/DNRL/NWE1
Jim Thornton	Duke Energy
Josh Moore	Duke Energy
John McConagy	Duke Energy
Al Dahrouge	Duke Energy
Tom Slavonic	Duke Energy*
Michael Gray	Duke Energy*
Randy Cumbest	Duke Energy*
Malcom Schaeffer	Duke Energy*

\*Duke Energy Consultant

### Purpose of Visit

- Standard License Conditions require a COL applicant to perform detailed geologic mapping of excavations for nuclear island structures and to then notify the NRC when the excavations are available for examination by NRC staff.
- The foundation rock for Cherokee Unit 1 was mapped and covered with fill concrete and a structural slab, and therefore cannot be examined.
- The purpose of the site visit is to enable NRC staff to examine areas of the Cherokee Unit 2 foundation rock that were mapped at the same time as Cherokee Unit 1, and by comparison to draw conclusions about the Cherokee Unit 1 geologic conditions that will underlie Lee Unit 1.

We will begin at 08:00 on Tuesday in Charlotte. We will begin at 09:30 on Wednesday and Thursday for the site visit, allowing travel from Charlotte.

### Agenda

- Day 1 (12 July) Duke Energy Charlotte Offices (ECII-09105A) 08:00-16:00
  - Review Questions from Mapping Report DUK-001-PR-01
  - Discuss Content of future docketed submittal addressing foundation mapping
  - Discuss likely License Condition for unmapped area of Lee Unit 1
- Days 2 and 3 (13-14 July) Lee Nuclear Site 09:30-17:30 (Lunch Provided)
  - Review Comparative Mapping Areas (Cherokee 2 area)
  - Observe visible Zone 6 features (Cherokee 2 area)
  - Observe Cherokee 3 / Lee 2 excavation area (between top-of-rock and foundation level)

# Mapped Areas – Cherokee Final Foundation

