

February 21, 2012

MEMORANDUM TO: Ronaldo Jenkins, Chief  
Licensing Branch 3  
Division of New Reactor Licensing  
Office of New Reactors

FROM: Tom Tai, Senior Project Manager /RA/  
Licensing Branch 3  
Division of New Reactor Licensing  
Office of New Reactors

SUBJECT: FEBRUARY 27 TO MARCH 3, 2012, AUDIT OF NUCLEAR  
INNOVATION NORTH AMERICA, LLC, COMBINED LICENSE  
APPLICATION SEISMIC ANALYSES

By letter dated September 20, 2007, South Texas Project (STP) Nuclear Operating Company submitted a combined license application (COLA) for two new units designated STP Units 3 and 4. On January 24, 2011, Nuclear Innovation North America, LLC became the primary applicant for the license for these two units.

The staff has identified a need to audit the seismic design analyses that support STP Units 3 and 4 COLA to address the additional analyses resulting from the compliance to Regulatory Guide 1.221, and Department of Energy's discovery of technical problems with the computer code, system for analysis of soil structure interaction. The audit will take place at the Sargent and Lundy office in Chicago, Illinois from February 27 to March 3, 2012. A copy of the audit plan is enclosed.

Docket Nos.: 52-012  
52-013

Enclosure: As stated

cc w/encl.: See next page

CONTACT: Tom Tai, NRO/DNRL  
301-415-8484

MEMORANDUM TO: George Wunder, Chief  
Licensing Branch 3  
Division of New Reactor Licensing  
Office of New Reactors

FROM: Tom Tai, Senior Project Manager /RA/  
Licensing Branch 3  
Division of New Reactor Licensing  
Office of New Reactors

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CONTACT: Tom Tai, NRO/DNRL  
301-415-8484

DISTRIBUTION:

PUBLIC	MChakravorty, NRO	SChakrabarti, NRO
LPLI-1 R/F	TTai, NRO	BThomas, NRO
NRO_DNRL_BWR	GWunder, NRO	SGreen, NRO

ADAMS Accession No: ML120470531

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OFFICE	PM: NRO/DNRL/LB3	LA: NRO/DNRL/LB3	TR: DE/SEB2	BC: DE/SEB2	PM: RO/DNRL/LB3
NAME	TTai	SGreen (by e-mail)	MChakravorty	BThomas	GWunder
DATE	02/17/12	02/17/12	02/21/12	02/21/12	02/21/12

OFFICIAL RECORD COPY

**AUDIT PLAN TO REVIEW SEISMIC ANALYSES  
SOUTH TEXAS PROJECT UNITS 3 AND 4 COMBINED LICENSE APPLICATION**

APPLICANT: Nuclear Innovation North America, LLC

APPLICANT CONTACT: Scott Head  
John Price  
Bill Mookhoek, et. al.

DATE/TIME: February 27 – March 3, 2012  
8:30 a.m. - 5:00 p.m.

LOCATION: 55 E. Monroe St.  
Chicago, IL 60603

REVIEWERS: Brian Thomas (NRO/DE/SEB2)  
Manas Chakravorty (NRC/DE/SEB2)  
Samir Chakrabarti (NRC/DE/SEB2)  
George Wunder (NRC/NRO/LB3)  
Mansour Tabatabaie (NRC Consultant)  
Peter Arnold (NRC Consultant)  
M. K. Ravindra (NRC Consultant)

**BACKGROUND**

On January 20, 2007 South Texas Project (STP) Nuclear Operating Company submitted to the U.S. Nuclear Regulatory Commission (NRC), a Combined License Application (COLA) Final Safety Analysis Report (FSAR) to construct and operate two additional units, STP Units 3 and 4 based on the U.S. Advanced Boiling-Water Reactor (ABWR) Certified Design Control Documents (DCD) at the STP Nuclear Power Plant site located in the County of Matagorda near Bay City, Texas. On January 24, 2011, Nuclear Innovation North America, LLC (NINA) became the primary applicant for the license for these two units.

The NRC staff is reviewing the STP Units 3 and 4 combined license (COL) application that incorporates by reference the design certification for the ABWR. Due to the technical issue of system for analysis of soil structure interaction identified by the Department of Energy (DOE), supporting analysis has been prepared by NINA's staff to address this technical issue. In addition, as a result of the new Regulatory Guide, 1.221, on hurricane wind, NINA conducted an evaluation of this new parameter on existing design. The Structural Engineering Branch 2 (SEB2) proposes to conduct an audit of these analyses in support of the review of Chapters 3.7 and 3.8. The NRC staff will perform the audit at the Sargent & Lundy office in Chicago, Illinois. The NRC staff will follow the guidance in Office of New Reactors (NRO) Office Instruction NRO-REG-108, "Regulatory Audits," in performing this audit.

## **PURPOSE AND APPROACH**

The purpose of this audit is to review analyses performed to address hurricane wind and the technical issue of SASSI that was identified by DOE. This effort is to support the seismic design and analyses for the STP Units 3 and 4 COL application. Any significant findings during the audit will be documented in the audit report and requests for additional information may be issued for scheduled action.

## **AUDIT ACTIVITIES AND SCHEDULE**

The NRC staff will conduct the audit from February 27, 2012 to March 3, 2012. The NRC staff may request an ad-hoc extension of the audit if deemed necessary. Such an extension will be requested before the meeting is adjourned on March 3, 2012 by the NRC staff responsible for the audit.

Following the audit, the NRC staff responsible for the audit will assemble and prepare a final audit report. The final report will be made available to all contributors.

The audit agenda is provided as Enclosure 2. Please contact Tom Tai at 301-415-8484 or at [Tom.Tai@NRC.Gov](mailto:Tom.Tai@NRC.Gov) if you have any questions related to the audit.

**Proposed Agenda**  
**U.S. Nuclear Regulatory Commission**  
**South Texas Project Combined License Application**  
**Seismic Analyses Audit**  
**February 27 – March 3, 2011**

**Monday, February 27, 2012: AUDIT - Proprietary**

<b><u>TIME</u></b>	<b><u>TOPIC</u></b>	<b><u>LEAD</u></b>
8:30 a.m.	Entrance / Introduction	NRC/NINA
9:00 a.m.	Benchmark Study of Calculation of Section Cut Forces and Moments from SASSI2000 versus SAP2000 (Ch 3.7 & 3.8) Review of calculations to verify design vs. SSI margins for section cut forces (3.8).	
12:00 p.m.	Lunch	
1:00 p.m.	Project-Specific Verification of Modified Subtraction Method versus Direct Method (Ch 3.7) Presentation by NINA on lateral soil pressures explaining the soil pressure diagrams for all structures in the FSAR and how H, H', driving soil pressures, and resisting soil pressures are determined (PLI 189, 190, 191) (3.8) Discussions with NINA stability evaluation issues (PLI 192 and 193) (3.8)	
4:30 p.m.	Summary for the Day and Actions	NRC/NINA

**Tuesday, February 28, 2012: AUDIT - Proprietary**

8:30 a.m.	Review Plan and Scope of the Day	NRC/NINA
9:00 a.m.	Site Specific Seismic analyses of UHS Basin & RSW Pump House to address Subtraction Method Issues (Ch 3.7)  Review of lateral soil pressures used in design of Cat I structures (3.8)	
12:00 p.m.	Lunch	
1:00 p.m.	Site Specific Seismic analyses of UHS Basin & RSW Pump House to address Subtraction Method Issues (Ch 3.7)	

	Continue review of lateral soil pressures. (3.8) Discussion with NINA regarding PLI 187 and associated items (including in FSAR plans, sections, and dimensions of major elements, etc) (3.8)	
4:30 p.m.	Summary for the Day and Actions	NRC/NINA

**Wednesday, February 29, 2012: AUDIT - Proprietary**

8:30 a.m.	Review Plan and Scope of the Day	NRC/NINA
9:00 a.m.	Site-Specific Seismic Analyses of RSW Piping Tunnel to address Subtraction Method Issues (Ch 3.7) NINA presentation on hurricane wind design (3.8) Review of calculations for hurricane wind design. (3.8)	
12:00 p.m.		Lunch
1:00 p.m.	Site-Specific Seismic Analyses of DGFOV to address Subtraction Method Issues (Ch 3.7) Continue review of calculations for hurricane wind design. (3.8)	
4:30 p.m.	Summary for the Day and Actions	NRC/NINA

**Thursday, March 1, 2012: AUDIT - Proprietary**

8:30 a.m.	Review Plan and Scope of the Day	NRC/NINA
9:00 a.m.	Development of Amplified Soil Motions for SSI and II/I Evaluations of Site-Specific Structures Impacted by Subtraction Method Issues (Ch 3.7) Review of Punch List Items and comments on latest FSAR. (3.8)	
12:00 p.m.		Lunch
1:00 p.m.	Site Specific Seismic Analyses of RWB, TB, CBA and SB for II/I Evaluations (Ch 3.7) Review of SER sections with NINA and resolution of open issues. (3.8)	
4:30 p.m.	Summary for the Day and Actions	NRC/NINA

**Friday, March 2, 2012: AUDIT - Proprietary**

8:30 a.m.	Review Plan and Scope of the Day	NRC/NINA
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9:00 a.m.	Site Specific Seismic Analyses of RWB, TB, CBA and SB for II/I Evaluations (Ch 3.7) Review of SER sections with NINA and resolution of open issues (3.8)
12:00 p.m.	Lunch
1:00 p.m.	Review of SER sections with NINA and resolution of open issues (3.7, 3.8)

**Saturday, March 3, 2012: AUDIT - Proprietary**

8:30 a.m.	Review Plan and Scope of the Day	NRC/NINA
9:00 a.m.	Review of SER sections with NINA and resolution of open issues (3.7, 3.8)	
12:00 p.m.	Lunch	
1:00 p.m.	Discussion of miscellaneous issues with NINA (3.7, 3.8)	
3:00 p.m.	NRC Caucus	
4:00 p.m.	Exit	

COL - STP Nuclear - South Texas Mailing List  
cc:

(Revised 01/26/2012)

Certrec Corporation  
4150 International Plaza, Suite 820  
Fort Worth, TX 76109

Judge  
Matagorda County  
Matagorda County Courthouse  
1700 Seventh Street  
Bay City, TX 77414

Mr. Brian Almon  
Public Utility Commission  
William B. Travis Building  
PO Box 13326  
1701 North Congress Avenue  
Austin, TX 78701-3326

M. A. McBurnett  
Senior VP, Oversight & Regulatory Affairs  
Nuclear Innovation North America, LLC  
4000 Avenue F  
Bay City, TX 77414

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

Bill Mookhoek  
Licensing Supervisor  
STP Units 3 and 4  
4000 Avenue F  
Bay City, TX 77414

Mr. Ed Halpin  
President & CEO  
STP Nuclear Operating Company  
P.O. Box 289  
Wadsworth, TX 77483

Mr. Peter G. Nemeth  
Crain, Caton & James, P.C.  
P.O. Box 289  
Mail Code: N5005  
Wadsworth, TX 77483

Mr. Scott Head  
Manager, Regulatory Affairs  
STP Units 3 & 4  
Nuclear Innovation North America, LLC  
4000 Avenue F  
Bay City, TX 76109

Mr. Terry Parks  
Chief Inspector  
Texas Department of Licensing  
and Regulation  
Boiler Division  
P.O. Box 12157  
Austin, TX 78711

Ms. Susan M. Jablonski  
Office of Permitting, Remediation  
and Registration  
Texas Comm. on Env. Quality  
MC-122  
P.O. Box 13087  
Austin, TX 78711-3087

Kathy C. Perkins, RN, MBA  
Assistant Commissioner  
Division for Regulatory Services  
Texas Department of State Health Services  
P.O. Box 149347  
Austin, Texas 78714-9347

Policy Director  
Environmental and Natural Resources  
P. O. Box 12428  
Austin, TX 78711-3189

**COL - STP Nuclear - South Texas Mailing List**

Mr. Frank M. Quinn  
8 Oak Avenue  
Gaithersburg, MD 20877-2705

Regional Administrator  
Region IV  
U.S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive  
Suite 400  
Arlington, TX 76011-8064

Alice Hamilton Rogers, PE  
Inspections Unit Manager  
Texas Department of State Health Services  
P.O. Box 149347  
Austin, Texas 78714-9347

Ms. Jamey Seely  
President & CEO  
Nuclear Innovation North America, LLC  
400 Avenue F, Suite A  
Bay City, TX 77414

Mr. Robert E. Sweeney  
IBEX ESI  
4641 Montgomery Avenue  
Suite 350  
Bethesda, MD 20814

## COL - STP Nuclear - South Texas Mailing List

### Email

APH@NEI.org (Adrian Heymer)  
awc@nei.org (Anne W. Cottingham)  
BrinkmCB@westinghouse.com (Charles Brinkman)  
cindyrae\_52@yahoo.com  
cwaltman@roe.com (C. Waltman)  
david.lewis@pillsburylaw.com (David Lewis)  
Derlinda.Bailey@chguernsey.com (Derinda Bailey)  
donald.woodlan@luminant.com (Donald Woodlan)  
dwuokko@tane.toshiba.com (Dale Wuokko)  
ed.burns@earthlink.net (Ed Burns)  
eliza.seedcoalition@gmail.com (Elza Brown)  
erg-xl@cox.net (Eddie R. Grant)  
gzinke@entergy.com (George Alan Zinke)  
jerald.head@ge.com (Jerald G. Head)  
jim.riccio@wdc.greenpeace.org (James Riccio)  
Joseph\_Hegner@dom.com (Joseph Hegner)  
kdrichards@stpegs.com (Kevin Richards)  
KSutton@morganlewis.com (Kathryn M. Sutton)  
kwaugh@impact-net.org (Kenneth O. Waugh)  
Ichandler@morganlewis.com (Lawrence J. Chandler)  
ldblaylock@cpsenergy.com (Larry Blaylock)  
louis.eichenberger@ge.com (Louis Eichenberger)  
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)  
maurerbf@westinghouse.com (Brad Maurer)  
media@nei.org (Scott Peterson)  
MSF@nei.org (Marvin Fertel)  
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)  
RJB@NEI.org (Russell Bell)  
Rschrauder@tane.toshiba.com (Robert Schrauder)  
sabinski@suddenlink.net (Steve A. Bennett)  
sandra.sloan@areva.com (Sandra Sloan)  
sfrantz@morganlewis.com (Stephen P. Frantz)  
smhead@stpegs.com (Scott Head)  
stephan.moen@ge.com (Stephan Moen)  
Tansel.Selekler@nuclear.energy.gov (Tansel Selekler)  
tom.miller@hq.doe.gov (Tom Miller)  
Vanessa.quinn@dhs.gov (Vanessa Quinn)

COL - STP Nuclear - South Texas Mailing List

Wanda.K.Marshall@dom.com (Wanda K. Marshall)  
wayne.marquino@ge.com (Wayne Marquino)  
wemookhoek@stpegs.com (Bill Mookhoek)