



Nuclear Innovation
North America LLC
4000 Avenue F, Suite A
Bay City, Texas 77414

October 10, 2011
U7-C-NINA-NRC-110123

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

South Texas Project
Units 3 and 4
Docket Nos. 52-012 and 52-013
Advanced Circulation (ADCIRC) Model Parameter Files and Validation

At the request of the NRC Staff, enclosed is a digital versatile disk (DVD) that contains the parameter files (fort.15) and nodal attribute files (fort.13) used by Nuclear Innovation North America (NINA) with version 49 of the Advanced Circulation (ADCIRC) model to predict the probable maximum storm surge. Also attached is a brief description of the validation of the ADCIRC model for the vicinity around the South Texas Project site and an explanation for why the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) wind model was used in combination with ADCIRC for some model runs.

There are no commitments in this letter.

The enclosure is a DVD that contains input/output files for computer codes for models that support the STP 3 & 4 COLA. The NRC Staff requested that these files be submitted in the native formats required by the software. As a result, the files on the enclosed DVDs may not comply with the requirements for electronic submission in NRC Guidance Document, "Guidance for Electronic Submissions to the NRC," dated November 20, 2007.

If you have any questions, please contact me at (361) 972-7136, or Bill Mookhoek at (361) 972-7274.

DOA
MPO

STI 32996093

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

Executed on _____

Scott Head
Manager, Regulatory Affairs
Nuclear Innovation North America LLC

rhb

Attachment: ADCIRC Validation in the STP Vicinity

Enclosure: DVD: NINA Letter U7-C-NINA-NRC-110123
ADCIRC Parameter (fort.15) and nodal attribute (fort.13) files

cc: w/o attachment or enclosure except*
(paper copy)

(electronic copy)

Director, Office of New Reactors
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

George F. Wunder
*Tekia Govan
Charles Casto
U. S. Nuclear Regulatory Commission

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

Jamey Seely
Nuclear Innovation North America

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

Richard Peña
Kevin Pollo
L. D. Blaylock
CPS Energy

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

*Steven P. Frantz, Esquire
A. H. Gutterman, Esquire
Morgan, Lewis & Bockius LLP
1111 Pennsylvania Ave. NW
Washington D.C. 20004

*Tekia Govan
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852

Validation of the Advanced Circulation (ADCIRC) Model in the STP Vicinity

Version 49 of the ADCIRC model was one of the three independent computer models used to predict the probable maximum storm surge (PMSS) at the STP site location. The ADCIRC model, as applied to the STP analysis, underwent an extensive flood level evaluation process to validate it over a range of conditions to ensure that the flow physics of the system were accurately characterized. The set of validation storms specific to the Texas coastal areas included Hurricanes Carla (1961), Celia (1970), Allen (1980), Alicia (1983), Bret (1999), Rita (2005), and Ike (2008). Hurricanes Rita and Ike were particularly useful storms for validation because of the large degree of surge they produced, and the accurate measurements of wind, atmospheric pressure, waves, and surge levels that exist for these two storms. This validation effort occurred under the direction of FEMA as part of a recent effort to update Flood Insurance Rate Maps (FIRMs) along the Texas Gulf of Mexico Coastline (Contact: Larry Voice, FEMA Region VI, 940-898-5419).

The ADCIRC model incorporates the Holland model to predict wind profiles. However, at the request of the NRC staff, the ADCIRC model code was changed to create the same wind profile used with the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model. This change to the ADCIRC model was undertaken as part of the effort to fully understand the reasons for differences in the PMSS predictions generated by SLOSH and ADCIRC. (Files included on the DVD enclosed with this submission show how the ADCIRC model code was modified.)

The SLOSH model produces higher wind speeds at a given distance from the center of the storm when compared to the wind speeds generated by the Holland model used with ADCIRC. As a result, use of the SLOSH wind model results with the ADCIRC model results in a higher prediction for the PMSS. However, as discussed with the NRC staff during an on-site audit in August of 2010, the Holland model is considered by the wind engineering and meteorological community as a more accurate model for defining the wind profile for a hurricane. The FEMA validation of the ADCIRC model for the Texas Gulf of Mexico Coastline is based on the ADCIRC model using the Holland wind model.