

Contents of enclosed digital media should be withheld from public disclosure  
in accordance with 10CFR2.390



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

January 9, 2014  
NOC-AE-13003057  
D43.02  
10 CFR 2.390

Attention: Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

South Texas Project  
Units 1 and 2  
Docket Nos. STN 50-498 and 50-499  
Response to Request for Additional Information re Use of RELAP5 in  
Analyses for Risk-Informed GSI-191 Licensing Application  
(TAC NOS. MF2400, MF2401, MF2402, MF2403,  
MF2404, MF2405, MF2406, MF2407, MF2408, AND MF2409)

Reference: E-mail, Balwant Singal, NRC, to Albon Harrison, STP, "Request for  
Additional Information - TACs MF2400 through and MF2409",  
January 9, 2014 (ML14009A307)

By the reference above, the NRC requested the RELAP5 code and modeling used for the  
thermal-hydraulic analyses in the STP Nuclear Operating Company (STPNOC) licensing  
application for a risk-informed approach to the resolution of Generic Safety Issue (GSI)-  
191. The requested RELAP5 information is provided in the enclosed digital media.

The information and analyses embodied in the code are considered to be proprietary and  
are accompanied by a formal request to withhold the documents from public disclosure in  
accordance with 10CFR2.390 (Attachment 1). The content of the enclosed digital media  
is considered to be proprietary in its entirety, so no redacted non-proprietary version is  
provided.

There are no regulatory commitments in this submittal.

ADD  
NRK

STI: 33793079

If there are any questions regarding this request, please contact Ken Taplett at (361) 972-8416 or me at (361) 972-7566.

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

Executed on: January 9, 2011



G. T. Powell  
Site Vice President

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Attachments: 1. Affidavit and Application for Withholding Proprietary Information  
from Public Disclosure

2. Response to NRC Request for Additional Information

Enclosure: RELAP5 digital media

(Ten (10) DVDs labeled NOC-AE-13003057 Disc 1 - 10)

cc:

(paper copy)

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In accordance with 10 CFR 2.390(b)(ii):

- (A) The specific information for which withholding from public disclosure is sought is the RELAP5 model of the STP Units 1 and 2 Nuclear Steam Supply System (NSSS) and input data that describes how the NSSS model will be specifically applied to the analyses used in the STPNOC risk-informed GSI-191 pilot project.
- (B) The official position of the person making this affidavit is the Site Vice President of STPNOC, who has been specifically delegated the function of reviewing the information sought to be withheld and authorized to apply for its withholding on behalf of STPNOC.
- (C) The basis for proposing the information be withheld is that the information constitutes trade secrets and commercial or financial information obtained from a person and privileged or confidential [10CFR2.390(a)(4)].
- (D) The harm that would result if the information sought to be withheld is disclosed to the public is described below.
- (E) The entire code and associated input specified in part (A) are considered to be proprietary. Therefore, there are no individual locations in the information marked "proprietary."

In accordance with 10 CFR 2.390(b)(iii), the following is a full statement of the reason for claiming the information should be withheld from public disclosure.

This model and associated data are a first-of-a-kind activity, which would have commercial benefit for other contractors/vendors if it were disclosed to the public. The input data also contains information that is proprietary to Westinghouse that is not contained in publicly available Westinghouse literature. Finally, the model and data draw application conclusions that are unique to the South Texas Project, which could be potentially misused by others if the document were disclosed to the public.

Further, STPNOC affirms that:

- (i) The information has been held in confidence by STPNOC.
- (ii) The information is of a type customarily held in confidence by STPNOC and there is a rational basis for doing so.
- (iii) The information has been transmitted to the NRC in confidence.
- (iv) The information is not available in public sources.

- (v) Public disclosure of the information sought to be withheld is likely to cause substantial harm to the competitive position of STPNOC, taking into account: the value of the information to STPNOC; the amount of money and effort expended by STPNOC in developing the information; and the ease or difficulty with which the information could be properly acquired or duplicated by others.

## Response to NRC Request for Additional Information

REQUEST FOR ADDITIONAL INFORMATIONLICENSE AMENDMENT REQUESTRISK-INFORMED APPROACH TO RESOLVING GSI-191SOUTH TEXAS PROJECT, UNITS 1 AND 2DOCKET NOS. 50-498, 50-499

By letter dated June 19, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML131750250), STP Nuclear Operating Company (STPNOC, the licensee) for South Texas Project (STP), Units 1 and 2, submitted a request for exemptions and license amendment request (LAR) for a risk-informed approach to resolving generic safety issue (GSI)-191.

Title 10 of the *Code of Federal Regulations* (CFR) Section 50.46(a)(1)(i) states, in part:

ECCS [Emergency Core Cooling System] cooling performance must be calculated in accordance with an acceptable evaluation model and must be calculated for a number of postulated loss-of-coolant accidents of different sizes, locations, and other properties sufficient to provide assurance that the most severe postulated loss-of-coolant accidents are calculated. Except as provided in paragraph (a)(1)(ii) of this section, the evaluation model must include sufficient supporting justification to show that the analytical technique realistically describes the behavior of the reactor system during a loss-of-coolant accident.

The ECCS evaluation model must also meet the specific requirements of 10 CFR 50.46(b)(1) and (50.46(b)(5), the ability of peak cladding temperature to remain below 2200 degrees Fahrenheit and sufficient long-term cooling of the reactor core, respectively.

In the LAR, STP uses the RELAP-3D code to perform thermal-hydraulic analyses and evaluate Loss-of-Coolant Accidents (LOCAs).

The NRC staff requests the licensee to provide the following:

1. RELAP-3D input decks for these cases with a 3-D vessel and 1-D core:
  - a. Steady state case in Cold Leg
  - b. Medium Break LOCA (6") in Cold Leg
  - c. Double-Ended Guillotine (DEG) Break in Cold Leg
  - d. Core blockage input file
2. RELAP-3D input decks for these cases with a 3-D vessel and 3-D core:
  - a. Steady state case in Cold Leg
  - b. Medium Break LOCA (6") in Cold Leg
  - c. DEG Break in Cold Leg

- d. DEG Break in Cold Leg with maximum boron
- e. Core blockage input file
3. Conversion tables between RETRAN and RELAP-3D ("South Texas Project Power Plant RETRAN-RELAP-3D Conversion Tables")
4. Documentation describing model verification ("South Texas Project Power Plant RELAP-3D Steady-state model verification")

**STPNOC Response:**

The requested information is provided in the enclosed proprietary digital media. The enclosure includes 10 DVDs. Disc 1 contains the RELAP5-3D input files and describes the contents of the enclosed media

The contents of the media should be withheld from public disclosure. In accordance with 10CFR2.390, Attachment 1 to the cover letter describes the basis for withholding the proprietary information. As stated in the cover letter and Attachment 1, the information is considered proprietary in its entirety.

As discussed in a teleconference with the NRC staff on January 6, 2014, additional scenarios are included to supplement the cases requested in the draft RAI for RELAP5 inputs (referenced in the cover letter). The following additional files and clarifying information are attached:

1. 3-D Vessel and 1-D Core
  - Small Break LOCA (2") in Cold Leg
  - Small Break LOCA (2") in Hot Leg
  - Medium Break (6") in Hot Leg
  - Double-Ended Guillotine (DEG) Break in Hot Leg
2. 3-D Vessel and 3-D Core
  - Full Core Blockage and Free Core Bypass input file
  - Full Core Bypass Blockage and Core Blockage except 1 FA at the center input file
  - Full Core and Core Bypass Blockage input file
3. Documentation
  - Input transmittal memo with specific instructions on how to use the input files to execute core blockage simulations.

As discussed in the call, the additional cases form the basis for not only PRA acceptance criteria, but in addition, they demonstrate the safety margin and defense in depth described in the submittal (ML13323A183) Enclosure 4-1, Section 2.1 "Defense-In-Depth and Safety Margin".

The PRA acceptance criteria for in-vessel effects are partially established by highly conservative sensitivity studies of small, medium, and large breaks in the cold leg and hot leg using the RELAP5 3D vessel, 1D core model following recirculation initiation. These cases assumed that not only is the core completely blocked but also, the bypass is completely blocked even though there are no major blockage opportunities in the core bypass region. Even when medium and



large cold leg break scenarios are investigated with open bypass (conservatively ignoring the STP LOCA holes in the baffle walls), such cases go to success.

In Enclosure 4-1, Section 2.1.2 "Safety Margin", more realistic scenarios that used the 3D vessel, 3D core model are described where just the flow area of one fuel assembly maintains core cooling below the failure peak clad temperature (PCT) (800°F). This small flow area would be much less than the flow area of the core baffle bypass flow area and the cases demonstrate that the PCT is insensitive to the open location.

Enclosure

RELAP5 digital media  
Ten (10) DVDs labeled NOC-AE-13003057 Disc 1 - 10