



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

April 27, 2009
U7-C-STP-NRC-090040

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
Response to Request for Additional Information

Attached is response to the NRC staff question in Request for Additional Information (RAI) letter number 90 related to Combined License Application (COLA) Part 2, Tier 2, Section 11.2.

The Attachment provides response to the RAI question below:

RAI 11.02-2

Please note that the files on the enclosed CD do not comply with the requirements for electronic submission in NRC Guidance Document "Guidance for Electronic Submissions to the NRC" dated October 29, 2008. These files cannot be formatted as .pdf files. Specifically, these files contain input/output codes or input data for various models used in development of Section 11.2. The NRC staff requested the files be submitted in the native formats required by the software in which they are utilized to support review of Section 11.2 of the COLA.

We request this information be placed on the docket and these source files be made available for use by the NRC staff.

No revisions to the COLA are required as a result of this letter.

There are no commitments in this letter.

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

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

Executed on 4/27/09



Scott Head
Manager, Regulatory Affairs
South Texas Project Units 3 & 4

scs

Attachment:

Question 11.02-2

Enclosure: CD containing supporting data in source file format.

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

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

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

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

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

C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

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

*George F. Wunder
*Raj Anand
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852

(electronic copy)

*George Wunder
*Raj Anand
Loren R. Plisco
U. S. Nuclear Regulatory Commission

Steve Winn
Eddy Daniels
Joseph Kiwak
Nuclear Innovation North America

Jon C. Wood, Esquire
Cox Smith Matthews

J. J. Nesrsta
R. K. Temple
Kevin Pollo
L. D. Blaylock
CPS Energy

RAI 11.02-2:**QUESTION:**

Please provide detailed information to enable the NRC staff to validate and verify the estimated liquid effluent doses in the applicant's FSAR, Section 11.2.3, "Estimated Releases," with respect to the dose objectives of Appendix I to 10 CFR 50, and the dose limits in 10 CFR 20.1301(e). Please revise the FSAR to include this information, or justify its exclusion. The information should include the following:

- 1.) A complete description of how the applicant derived all the values, including all assumptions made;
- 2.) Citations to any reference material used (for documents not publicly available, please provide a copy for the NRC staff's use).
- 3.) A detailed breakdown of individual doses and MEI doses by pathway and organ; and
- 4.) A detailed breakdown of population doses by pathway and organ.
- 5.) Provide the basis for all parameters and values used in the LADTAP II code or equivalent calculation.
- 6.) Provide the LADTAP II code input/output files used to calculate the liquid effluent doses.

RESPONSE:

The estimated liquid effluent doses in FSAR Section 11.2.3 are taken from Section 5.4, "Radiological Impacts of Normal Operations" of the Environmental Report. The information provided below presents the requested information, along with an explanation of where the information is located in ER Section 5.4. (Note: all enclosed files are denoted in *CAPITALIZED ITALICS*. All references to the ER are to the Rev. 02 version of that document).

1.) A complete description of how the applicant derived all the values, including all assumptions made:

and

2.) Citations to any reference material used (for documents not publicly available, please provide a copy for the NRC staff's use).

ER Table 5.4-1 gives the important parameters and values used in the LADTAP II code. The footnotes to that table give the assumptions and citations for the derivation of those parameters and values. All of the reference documents cited in ER Section 5.4 have either previously been submitted to the NRC or are publically available.

As described in ER Section 5.4.1.1, three liquid pathway receptor waters are modeled. They are Little Robbins Slough, Colorado River, and Matagorda Bay. Footnote [1] to Table 5.4-1 details how the release source terms to each of these were calculated. Those calculations are included on the enclosed CD as *LIQUID SOURCE TERMS-REV2.XLS*. That spreadsheet reflects the annual release from each of the new units to the MCR as given in ER Table 3.5-1 and the annual release from the existing units as given on p.5-10 of ER Reference 5.4-6.

It should be noted that the Units 3 & 4 annual releases are described in explanatory notes in some of the spreadsheet and computer files enclosed in this response as being from DCD Table 12.2-22. Those computer files were created with the thought that the FSAR would provide updated values to reflect the annual ABWR releases in ER Table 3.5-1; all modeled releases were, in fact, from ER Table 3.5-1.

Table 5.4-1 water body flow rates are from p.2-8 of ER Reference 5.4-6. The water transit time in the river is conservatively assumed as 1 hour; test runs indicated no difference in results if this parameter were chosen as 0.1 hours. The fish and invertebrate catch is from p.B4-22 of ER Reference 5.4-3; they were assumed as sport rather than commercial catch to maximize the 50-mile population dose. The age-dependent individual shoreline usage rates were taken from Table B4-8 (p.B4-141) of ER Reference 5.4-3. The population shoreline usage was calculated from the individual usage rates (an individual adult was assumed to use the shoreline at a rate equal to teenagers) multiplied by the LADTAP default population age distribution (see next paragraph) and multiplied by the 50-mile population of ER Table 5.4-1. As noted in Footnote [8] of ER Table 5.4-1, and inferred from ER Reference 5.4-3, Tables B4-9 and B4-10a, one-half of the population shoreline usage is applied to each of the Colorado River and Matagorda Bay. All other parameters and variables in ER Table 5.4-1 are straight-forward. There is no irrigation using downstream water. This goes along with (and has the same references, e.g., Table B4-4 {p.B4-29} of ER Reference 5.4-3, as) the zero drinking water consumption given in the table.

3.) *A detailed breakdown of individual doses and MEI doses by pathway and organ;*

and

4.) *A detailed breakdown of population doses by pathway and organ*

and

5.) *Provide the basis for all parameters and values used in the LADTAP II code or equivalent calculation*

and

6.) Provide the LADTAP II code input/output files used to calculate the liquid effluent doses.

The six LADTAP input files, *LADTaaab.DAT*, where *aaa* = *ROB* (Little Robbins Slough), *COL* (Colorado River), or *MAT* (Matagorda Bay), and *b* = 1 (existing units 1 & 2) or 2 (proposed units 3 & 4), are enclosed. The first line of each indicates the source being modeled (water body and release) and documents the source term multiplier, UML, given in line 2; UML is based on the data source and data units in *LIQUID SOURCE TERMS-REV2.XLS*. The LADTAP default population age distribution (71% adults, 11% teenagers, 18% children) was used (TR=0 on line 3). All releases are assumed fully mixed with the receiving water body; accordingly there is no re-concentration model (M=0 on line following nuclide release rates) and the impoundment volume is specified as zero.

With a dilution factor of 1 for all receptors, the river concentration is the release rate divided by QSUBB (as found on the line following nuclide release rates). QSUBB is taken, for each of the three water bodies, as the water body flow in ER Table 5.4-1. The shore-width factor, SWF, is taken as 0.2 for Little Robbins Slough and the Colorado River and 0.5 for Matagorda Bay (from Table B4-3 {p.B4-28} of ER Reference 5.4-3).

The six LADTAP output files, *LADTaaab.OUT* (*aaa* and *b* as described previously), correspond with the six input files described above. *LIQUID MEI DOSES-REV2.XLS* gives the individual and MEI doses from the *.OUT* files by age group, organ, exposure pathway, and receiving water for the two proposed ABWRs at STP; the overall MEI for each organ (per operating ABWR) is at the bottom of that spreadsheet. Note that, because Little Robbins Slough is identified as fresh water, LADTAP calculates a drinking water dose for it. However, p.7-4 (among others) of ER Reference 5.4-6 notes only fishing and shoreline exposure pathways; LADTAP calculated MEI drinking water doses were not included in the MEI dose.

LIQUID POP DOSES BY UNIT, RECEIVING WATER, and NUCLIDE TYPE-REV2.XLS, combines the components of total population dose from the Colorado River and Matagorda Bay; Little Robbins Slough does not contribute significantly to the population dose. Doses are shown in the spreadsheet for the proposed new units and for the existing units, by water body and nuclide type (e.g., Iodine and particulates). Doses by nuclide type correspond with entries in ER Table 5.4-9. Although not required for any of the ER Section 5.4 tables, the enclosed *LIQUID POP DOSES BY UNIT, RECEIVING WATER, ORGAN AND PATHWAY.XLS*, gives population doses by pathway and organ extracted from the previously described *.OUT* files.

No COLA revisions are required as a result of this response.